















THE  
NORTH CAROLINA COLLEGE  
OF  
AGRICULTURE AND MECHANIC ARTS,  
RALEIGH.  
1899—1900.

FRESSES OF E. M. UZZELL,

RALEIGH, N. C.

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## COLLEGE CALENDAR.

1900.

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Saturday,	July	28,	{ Entrance examination at each county court-house, 10 A. M.
Tuesday,	September	4,	{ Entrance examination at the College, 9 A. M.
Wednesday,	September	5,	First Term begins; Registration Day.
Thursday,	November	29,	Thanksgiving Day.
Thursday,	December	20,	First Term ends.

1901.

Thursday,	January	3,	Second Term begins; Registration Day.
Monday,	February	11,	Announcement of Subjects of Theses.
Friday,	March	15,	Second Term ends.
Monday,	March	18,	Third Term begins; Registration Day.
Friday,	May	17,	Last Day for submitting Theses.
Friday,	May	24,	Examinations end.
Sunday,	May	26,	Baccalaureate Sermon.
Monday,	May	27,	Alumni Day.
Tuesday,	May	28,	{ Annual Oration. Meeting of Board of Trustees.
Wednesday,	May	29,	Commencement Day.

# BOARD OF TRUSTEES.

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W. S. PRIMROSE, *President*, Raleigh.

R. L. SMITH, *Secretary*, Albemarle.

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W. S. PRIMROSE, Raleigh	State-at-Large	1901
A. LEAZAR, Mooresville	State-at-Large	1901
H. E. FRIES, Salem	State-at-Large	1901
D. A. TOMPKINS, Charlotte	Sixth District	1901
T. B. TWITTY, Rutherfordton	State-at-Large	1901
FRANK WOOD, Edenton	First District	1901
J. C. L. HARRIS, Raleigh	State-at-Large	1903
L. C. EDWARDS, Oxford	State-at-Large	1903
JOHN W. HARDEN, JR., Raleigh	State-at-Large	1901
H. E. BONITZ, Wilmington	State-at-Large	1901
MATT MOORE, Kenansville	Third District	1901
J. Z. WALLER, Burlington	Fifth District	1901
W. H. RAGAN, High Point	State-at-Large	1901
DAVID CLARK, Charlotte	State-at-Large	1901
R. L. SMITH, Albemarle	State-at-Large	1901
P. J. SINCLAIR, Marion	State-at-Large	1901
J. B. STOKES, Windsor	Second District	1901
W. J. PEELE, Raleigh	Fourth District	1901
E. Y. WEBB, Shelby	Seventh District	1901
W. C. FIELDS, Sparta	Eighth District	1901
J. FRANK RAY, Franklin	Ninth District	1901
GEO. T. WINSTON, President of the College		<i>Ex officio.</i>

## EXECUTIVE COMMITTEE.

W. S. PRIMROSE, *Chairman*; A. LEAZAR, and H. E. FRIES.

## COLLEGE FINANCE COMMITTEE.

W. H. RAGAN, *Chairman*; J. F. RAY, and DAVID CLARK.

## STATION FINANCE COMMITTEE.

W. C. FIELDS, *Chairman*; J. B. STOKES, and E. Y. WEBB.

## FACULTY.

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GEORGE TAYLOE WINSTON, A.M., LL.D., President and Professor of Political Economy.

WILBUR FISK MASSEY, C.E., Professor of Horticulture, Arboriculture and Botany.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Pure and Agricultural Chemistry.

DANIEL HARVEY HILL, A.M., Professor of English.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Mathematics.

BENJAMIN IRBY, M.S., Professor of Agriculture.

FREDERICK AUGUSTUS WEIHE, M.E., Ph.D., Professor of Physics and Electrical Engineering.

CHARLES WALTER SCRIBNER, A.B., M.E., Professor of Mechanical Engineering.

ROBERT E. LEE YATES, A.M., Instructor in Mathematics.

CHARLES MARCELLUS PRITCHETT, B.S., M.E., C.E., Instructor in Mechanical Engineering.

CHARLES BENJAMIN PARK, Superintendent of Shops.

JAMES ADRIAN BIZZELL, B.S., Instructor in Chemistry.

THOMAS LOFTIN WRIGHT, B.S., Instructor in Mathematics and English.

CHARLES WALTER HYAMS, Instructor in Botany and Entomology.

JAMES MARTIN JOHNSON, B.S., M.S., Instructor in Animal Industry.

GEORGE STRONACH FRAPS, B.S., Ph.D., Instructor in Chemistry.

ALEXANDER RHODES, Instructor in Horticulture.

NUMA REID STANSEL, B.S., Instructor in Military Science and Tactics, and Assistant in Electrical Engineering.



GEORGE FRANKS IVEY, A.B., Instructor in Textile Industry.  
WILLIAM ANDERSON SYME, B.S., Instructor in Chemistry.  
JOHN WILLIAM CARROLL, B.S., Assistant in Dairying.  
CARROLL LAMB MANN, B.S., Assistant in Civil Engineering.  
BENJAMIN CAREY FENNELL, B.S., Assistant in Mechanical Engineering.  
FRANCIS MARION FOY, JR., B.S., Assistant in Physics and Electrical Engineering.  
ANDREW THOMAS SMITH, Assistant in Shop Work.

### OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Librarian.  
JOHN MEADE FIX, Bursar.  
ARTHUR FINN BOWEN, Registrar and Secretary.  
ELIZABETH VANDER VEER DARBY, Stenographer.  
BENJAMIN SMITH SKINNER, Farm Superintendent.  
SUSAN COLWELL CARROLL, Matron.  
JAMES RUFUS ROGERS, A.B., M.D., Physician.

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### AGRICULTURAL EXPERIMENT STATION DEPARTMENT.

GEORGE TAYLOE WINSTON, A.M., LL.D., President and Director.  
WILLIAM ALPHONSO WITHERS, A.M., Chemist.  
BENJAMIN IRBY, M.S., Agriculturist.  
WILBUR FISK MASSEY, C.E., Horticulturist.  
GEORGE STRONACH FRAPS, Ph.D., Assistant Chemist.  
JAMES ADRIAN BIZZELL, B.S., Assistant Chemist.  
ALEXANDER RHODES, Assistant Horticulturist.  
CHARLES WALTER HYAMS, Assistant Botanist and Entomologist.  
JAMES MARTIN JOHNSON, M.S., Assistant in Animal Industry.  
JOHN MEADE FIX, Bursar.  
ARTHUR FINN BOWEN, Secretary.  
ELIZABETH VANDER VEER DARBY, Stenographer.

**MILITARY ORGANIZATION.**

NUMA REID STANSEL, Commandant.

**Staff.**

HENRY ALLEN HUGGINS, Major.

ANDREW THOMAS SMITH, Captain.

FLOYD DE ROSS, First Lieutenant and Adjutant.

SOLOMON ALEXANDER VEST, First Lieutenant and Quarter-master.

**Non-commissioned Staff.**

KEMP ALEXANDER, Sergeant-major.

GEORGE ROLAND HARRELL, Color Sergeant.

**Band.**

ANDREW THOMAS SMITH, Director.

FLETCHER HESS BARNHARDT, EDWARD OSCAR SMITH,  
Principal Musicians.

JESSE JAMES LILES, Drum-major.

BENJAMIN OLIVER HOOD, ZOLLY MOSBY BOWDEN, Ser-  
geants.

JOSEPH PLATT TURNER, Chief Trumpeter.

**Company Officers.**

**Co. A**—J. H. BUNN, Captain; J. W. SHORE, First Lieutenant; R. H. MORRISON, Second Lieutenant; W. H. PERSON, First Sergeant; W. E. ROSE, Second Sergeant; J. L. MCKINNON, Third Sergeant; F. G. CRITCHFIELD, Fourth Sergeant; W. S. STURGILL, Fifth Sergeant; W. P. CRAIG, First Corporal; V. Y. MOSS, Second Corporal; R. I. HOWARD, Third Corporal; R. G. CRAVER, Fourth Corporal.

**Co. B**—J. E. PORTER, Captain; I. O. SCHAUB, First Lieutenant; M. M. HARRIS, Second Lieutenant; W. T. SMITH, First Sergeant; F. H. BONITZ, Second Sergeant; W. F. PATE, Third Sergeant; B. V. WRIGHT,

Fourth Sergeant; B. J. BROWN, Fifth Sergeant; B. N. SULLIVAN, First Corporal; I. McPHAIL, Second Corporal; T. O. POMEROY, Third Corporal; J. E. PEARSON, Fourth Corporal.

**Co. C**—R. M. WAGSTAFF, Captain; L. G. BERRY, First Lieutenant; G. JONES, Second Lieutenant; R. F. RICHARDSON, First Sergeant; L. O. LOUGEE, Second Sergeant; W. L. CRAVEN, Third Sergeant; G. M. DAVIS, Fourth Sergeant; B. M. GRAVES, Fifth Sergeant; C. H. McQUEEN, First Corporal; C. D. WELCH, Second Corporal; B. B. CARR, Third Corporal; J. L. FEREBEE, Fourth Corporal.

**Co. D**—R. L. BERNHARDT, Captain; L. H. MANN, First Lieutenant; G. H. WHITING, Second Lieutenant; P. COLLINS, First Sergeant; W. D. FAUCETTE, Second Sergeant; I. N. SANDERS, Third Sergeant; W. O. BENNETT, Fourth Sergeant; C. A. NICHOLS, Fifth Sergeant; R. E. SNOWDEN, First Corporal; L. MOSELEY, Second Corporal; H. G. DORSETTE, Third Corporal; A. L. CLARK, Fourth Corporal.

## GENERAL INFORMATION.

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The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and the late R. S. Pullen, of Raleigh. The Congress of the United States in 1862 passed a law donating to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to \$7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was donated by the late R. S. Pullen. The College was formally opened for students October 1st, 1889, with one building and five teachers.

Additional funds were provided afterwards by the National Congress for the support of the College and the State Agricultural Experiment Station, which is now a department of the College.

An annual appropriation of \$10,000 is made by the Legislature of North Carolina, this being the only money received directly from the State.

The College is beautifully located in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects. There is an abundant supply of water from deep wells, and the natural slope of the land furnishes perfect drainage.

The College now owns six hundred acres of land and twelve buildings, and its teaching force consists of twenty-four persons. Its library contains three thousand volumes, and its reading-room is well supplied with journals, magazines and periodicals relating to agriculture, engineering, and the mechanic arts. Both library and reading-room are accessible to students eight hours a day. There are also special reference libraries in connection with the various laboratories, drawing-rooms, and work-shops.

## THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an Act of the General Assembly, ratified March 12, 1877. Its work was greatly promoted by Act of Congress of March 2d, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same.

The Experiment Station offices and laboratories are located in the Main Building of the College. The horticultural experiment farm contains twenty-three acres, and is well equipped with barns and other necessary houses. For agricultural experiments, sufficient land is reserved on the College farm, about twenty-five acres being appropriated to this purpose annually. Publications for the benefit of truckers, nurserymen, stock-raisers and other farmers are prepared by the Station and sent out free of charge to any one who desires them. A request to this effect, addressed "Agricultural Experiment Station, Raleigh, N. C.," will receive attention.

The Station conducts a large correspondence with farmers and others concerning agricultural matters. It is always glad to receive and to answer questions.

## THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, machinists, electricians, chemists, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Animal Industry, Horticulture, Mechanical Engineering, Civil Engineering, Electrical Engineering, Textile Industry, Chemistry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinery-work, Mill-work, Boiler-tending, Engine-tending, and Dynamo-tending.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal edu-

cation are not omitted. Thorough instruction is given in English, Mathematics, History, Civics, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, Physical Geography, Geology, and Mineralogy.

The College is not a place for young men who desire merely a general education without manual or technical training; nor for lads lacking in physical development, mental capacity, or moral fibre; nor for those that are unable or unwilling to observe regularity, system, and order in their daily work.

### MANUAL TRAINING.

Students who desire may employ their whole time in manual training. The carpenter shop, the wood-turning shop, the blacksmith shop, the machine shop, the drawing and designing-rooms, the barns, dairies, fields and green-houses afford facilities whereby young men of limited education may obtain very useful training and profitable skill. Farm boys, carpenters, lads aiming to be mechanics, machinists, electricians, engine-tenders, boiler-tenders, or dynamo-tenders, may find very profitable instruction at the College in a course lasting one year, or even less. Very many lads have come to the institution with practically no advantages of previous training, and have left it fairly well equipped for successful work.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the student in the Freshman Class who earns the largest and the next largest amount of money by agricultural labor on the College farm.

### DISCIPLINE.

The College is under military discipline and the students are regularly organized into a battalion. A printed copy of the rules and regulations is furnished each student on admission, and he is expected to conform to the same during his connection with the institution. The discipline is intended to secure studious and economical habits, with punctuality, system, and order in the performance of all duties. A cheap and durable uniform, which is required to be worn on all occasions, prevents extravagance and folly in dress; rooms plainly furnished and a mess-hall economically managed by the College prevent extravagance in living; regular study hours, day and night, with proper restrictions as to visiting Raleigh, check, or at least minimize, tendencies to idleness, vice, and rowdiness.



Regular reports of scholarship and conduct are made to parents and guardians three times a year. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College. Every effort is made to develop lads into strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform-school, and its work must not be hindered by the presence of lads that are grossly and inherently vicious, idle or incompetent.

### COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to the formation of good character, the development of manly physical vigor, and the promotion of literary, scientific, and technical research and training.

**The Young Men's Christian Association**, containing in its membership representatives of all the Christian denominations, meets regularly for conference, study, and worship, and exerts a wholesome influence throughout the College.

**The Pullen and Leazar Literary Societies** afford excellent opportunity for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

**The Technical Societies** stimulate special work in agriculture, mechanics, and the sciences. Their work consists in reviews of the various technical journals and reports of original investigations conducted in the College.

**The Alumni Association** meets on Monday of each year preceding Commencement day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. During the present year this Association has established a Student Aid Fund to assist needy students in obtaining their education at the College by making them small loans.

**The Athletic Association** is intended to promote physical health and manly spirit through athletic sport and gymnastic training. Under the direction of the Athletic Committee of the Faculty, it promotes practice in base-ball, foot-ball, and track athletics. The College is provided with extensive grounds, which furnish ample facilities for military drill, athletic sports, and gymnastic training.

**Secret Societies,** Greek letter fraternities and like organizations are not thought to be for the best interests of the College, and are not permitted.

### REQUISITES FOR ADMISSION.

Applicants for admission must be sixteen years of age and must bring certificates of good moral character from the last school attended. Applicants for admission to the Full (or Technical) Courses will be examined on the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, Analysis and Composition, American History. Applicants for admission to the Short (or Manual) Courses will be examined on Arithmetic (through decimal fractions), English Grammar, Analysis and Composition, and American History. Applicants for admission to the Special Courses will not be required to stand any entrance examinations, but they must be over eighteen years of age.

### ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the last Saturday in July of each year. The date for 1900 is July 28th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail, or if there should not be room enough for him in the College. Entrance examinations will be held also at the College on the first Wednesday in September of each year. The date for 1900 is September 5th, 9 o'clock A. M.

### ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to Special Courses.
2. School-teachers holding teachers' certificates.
3. Graduates of High Schools and Academies whose courses of study are approved by the Faculty of this College.

### SESSION.

The College session lasts nine months, opening annually the first Thursday in September and closing the last Wednesday in May, with a vacation of about ten days at Christmas.



## EXPENSES.

The annual expenses are as follows:

Tuition, \$20; Lodging, \$10; Fuel and Lights, \$12.50; Furniture, \$2; Library, \$1; Incidental, \$1; Medical Fee and Medicine, \$4.50; Board, \$72; total, \$123. Payments are made monthly in advance. There is no deduction for less time than one month, except for board. Each student is required to wear the College uniform, which costs \$16.85, and must be paid for when received. A cheap set of overalls should be purchased for shop and field work. Each student must supply four sheets, two pillow-cases, four towels and two counterpanes, which he can bring from home, and must purchase his own books, stationery, drawing instruments and materials, which he can obtain at the College. Students who are willing to work may reduce their total annual expenses to one hundred dollars.

## UNIFORM.

As stated above, the College uniform must be worn by all students excepting special students in Agriculture and Mechanic Arts. The uniform is of strong gray cloth, and with care it will last a year. New students are especially cautioned not to bring with them to the College a supply of citizen's clothing, as the uniform must be worn on all occasions.

## FREE TUITION.

Scholarships, conferring free tuition and lodging, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of any member of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and indorsed by the person recommending him. A scholarship once bestowed will be retained by the holder until graduation, unless he should prove neglectful of his studies or guilty of serious misconduct.

## SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from \$4 to \$10 a month. There

is also occasional employment, paying from \$2.50 to \$5 a month. New students should not rely upon securing employment the first four months. Except when arrangements have previously been made with the College authorities, young men in needy circumstances are not advised to come to the College, unless during the year they can have at their command at least one hundred dollars.

### STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient time is given for repayment to enable the student to earn the money himself. The amount lent each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, *alumni* and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to ninety dollars.

### BOARD AND LODGING.

All students are expected to board in the College mess-hall and room in the College dormitories. An abundant supply of plain, nourishing food, with as large variety as possible, is furnished absolutely at cost. The charge at present is \$8 per month, payable in advance, with reduction in case of withdrawal during the month.

Rooms in the College dormitories are supplied with electric lights, steam heat and all necessary furniture, excepting sheets, pillow-cases, bed spreads and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal. Lodging in the College buildings will not be supplied to special students, who are permitted, however, to board in the mess-hall, if they so desire.

Any student over twenty one years of age is permitted to room and board outside the College.

### CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspec-

tions, at frequent intervals, are made by the College physician. There is an abundant supply of pure water from twelve deep wells. Each cadet has a regular routine of daily life, including abundant physical exercise in the shops and on the drill-grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing. The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, doctor's office and medicine closet. The rooms are large, well ventilated, well lighted and heated with open fire-places. Each room opens upon a large pleasant portico. The furnishing and equipment of the rooms are such as is suitable to hospitals. The College physician visits the Infirmary daily at 10 o'clock, and in cases of serious illness, as frequently as may be required.

## COURSES OF INSTRUCTION.

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The College offers regular courses of instruction in the following lines:

**1st. Agriculture** (including Agriculture, Animal Industry, and Horticulture).

**2d. Engineering** (including Mechanical Engineering, Civil Engineering, Electrical Engineering, and Chemical Engineering).

**3d. Textile Industry.**

Students wishing to pursue any one of these lines of study may select a Full (or Technical) Course, requiring four years for its completion; a Short (or Manual) Course, requiring two years; or a Special Course, requiring about three months. Graduate Courses, also, are offered for the benefit of those who have completed the Full Courses.

**The Full Courses** offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, green-houses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The Bachelor's degree is conferred upon any one who completes a Full Course.

**The Short Courses** include nearly all the practical work of the Full Courses, with less theoretical instruction. They are intended for students who desire chiefly manual training or for those who are unable to complete the Full Courses. There are Short Courses in Agriculture, in the Textile Industry, and in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machinery-work, Mill-work, Boiler-tending, Engine-tending, and Dynamo-tending).

**The Special Courses** are intended for persons of limited means, or limited opportunity, who desire special training in any single line. Each course is arranged to suit individual needs. Any one of the following lines may be selected: Boiler-tending, Engine-tending or Dynamo-tending, Machine-work, Cotton Mill-work, Carpentry, Forging, Drawing, and Designing.

**The Graduate Courses**, extending over two years and leading to advanced degrees, are intended for students who have completed the Full Courses, and who desire further instruction and training along

special lines. Upon completion of the Graduate Courses, the following degrees are conferred: Master of Agriculture, Mechanical Engineer, Civil Engineer, Electrical Engineer, Chemical Engineer.

The Faculty earnestly advises all students to pursue a Full Course of instruction, and if possible after graduation, to take one or more years of graduate study.

## COURSES IN AGRICULTURE.

These courses are intended to educate farmers, stock-raisers, poultry-raisers, dairymen, truckers, florists, fruit-growers, agricultural chemists, botanists, and entomologists.

I. Full (or Technical) Course, leading to the degree of Bachelor of Agriculture.

### Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.			
	1st Term.	2d Term.	3d Term.	
1. Agricultural Practice -----	--	--	4	10 P.
Free-hand Drawing -----	4	--	--	
Mechanical Drawing -----	--	4	4	
Carpenter Shop -----	4	4	--	
Forge Shop -----	2	2	--	12 R
Lathe Shop -----	2	2	--	
Algebra -----	5	5	--	
Geometry -----	--	--	5	
Book-keeping -----	1	1	1	4 Dn
X Elementary Physics -----	2	2	2	
X Physical Geography -----	--	--	2	
Plant Morphology -----	--	--	4	
Physiology -----	2	--	--	
Rhetoric and Composition -----	3	3	3	
X History -----	2	2	2	
X Civics -----	--	2	--	
Military Drill -----	3	3	3	

X Elective

1. Reduce to 2

## Sophomore Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Elements of Agriculture -----	2	--	--
Staple Crops -----	--	--	2
Dairying -----	--	2	--
Breeds of Live Stock -----	--	--	5
Agricultural Practice -----	--	4	4
Pomology -----	2	--	--
Green-house Propagation -----	4	4	--
Architecture -----	1	1	1
Architectural Drawing -----	4	--	--
Geometry -----	5	--	--
Trigonometry -----	--	5	--
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
Entomology -----	--	2	2
Entomology (practice) -----	--	--	4
Higher Rhetoric -----	3	3	--
American Literature -----	--	--	3
Military Drill -----	3	3	3

## Junior Year.

Farm Drainage -----	4	--	--
Meteorology -----	--	--	4
Cattle-feeding -----	--	4	--
Dairy Bacteriology -----	--	3	--
Veterinary Science -----	--	--	3
Agricultural Practice -----	--	4	4
Landscape Gardening -----	--	2	--
Forestry -----	--	--	2
+ Surveying -----	3	--	--
Surveying (field work) -----	4	--	--
Organic Chemistry -----	2	2	2
Qualitative Analysis -----	6	6	6
Geology -----	2	2	2
Physiological Botany -----	2	--	--
Botanical Laboratory -----	4	4	4
English Literature -----	--	3	3
English History -----	3	--	--
Military Drill -----	3	3	3

*Elective*  
*X Lane as Engineers if elect*

## Senior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Agricultural Economics-----	--	--	4
Experiment Station Methods-----	--	--	3
Stock-breeding-----	--	4	--
Agricultural Practice-----	4	4	4
Market Gardening-----	3	--	--
Floriculture-----	--	3	--
Plant-breeding-----	--	--	3
Horticultural Practice-----	2	2	2
Agricultural Chemistry-----	3	3	--
Quantitative Methods-----	1	1	1
Quantitative Analysis-----	6	6	6
Vertebrate Zoology-----	4	--	--
English-----	2	2	2
Political Economy-----	2	2	2
Military Science-----	1	1	1
Military Drill-----	3	3	3

## II. Short (or Manual) Course (two years).

## First Year.

Elements of Agriculture-----	2	--	--
Staple Crops-----	--	--	2
Dairying-----	--	2	--
Agricultural Practice-----	4	4	4
Pomology-----	2	--	--
Horticultural Practice-----	4	4	--
Free-hand Drawing-----	4	--	--
Mechanical Drawing-----	--	4	4
Shop-----	4	4	4
Arithmetic-----	5	--	--
Algebra-----	--	5	5
Plant Morphology-----	--	--	4
Entomology-----	--	2	2
English Composition-----	3	3	3
American History-----	2	2	2
Military Drill-----	3	3	3

Total 17 hrs  
 1 hour

X in the year (or elective)



## Second Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Drainage-----	4	--	--
Cattle-feeding-----	--	4	--
Breeds of Live Stock-----	--	--	5
Dairy Bacteriology-----	--	3	--
Veterinary Science-----	--	--	3
Agricultural Practice-----	--	4	4
Agricultural Practice (special)-----	4	4	4
Landscape Gardening-----	--	2	--
Forestry-----	--	--	2
Horticultural Practice-----	4	4	--
Agricultural Chemistry-----	3	3	--
Architecture-----	1	1	1
Architectural Drawing-----	4	--	--
Book-keeping-----	1	1	1
Physical Geography-----	--	--	2
Physiological Botany-----	2	--	--
Physiology-----	2	--	--
Civics-----	--	2	--
Military Drill-----	3	3	3

## III. Special Course, beginning January 3.

	NO. OF HOURS PER WEEK.
Dairying-----	2
Cattle-feeding-----	2
Agricultural Practice-----	8
Market Gardening-----	3
Fertilizers-----	3
Entomology-----	2
Shop-----	4
Book-keeping-----	1

IV. Graduate Courses (2 years), leading to the Degree of Master of Agriculture. These courses will be arranged to suit each individual case.



## COURSE IN MECHANICAL ENGINEERING.

I. Full (or Technical) Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Carpenter Shop -----	4	4	4
Forge Shop -----	2	2	2
Lathe Shop -----	2	2	2
Algebra -----	5	5	--
Geometry -----	--	--	5
Book-keeping -----	1	1	1
Elementary Physics -----	2	2	2
✓ Physical Geography -----	--	--	2
✓ Physiology -----	2	--	--
Rhetoric and Composition -----	3	3	3
✓ History -----	2	2	2
✓ Civics -----	--	2	--
Military Drill -----	3	3	3

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\* Election

## Sophomore Year.

Steam Engine -----	1	1	1
Mechanical Drawing -----	2	2	2
Turning and Pattern Shop -----	5	5	5
Architecture -----	1	1	1
Architectural Drawing -----	4	4	4
Geometry -----	5	--	--
Trigonometry -----	--	5	--
Analytical Geometry -----	--	--	5
Mechanics -----	2	2	2
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
Higher Rhetoric -----	3	3	--
American Literature -----	--	--	3
Military Drill -----	3	3	3

## Junior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engineering-----	4	4	--
Mechanics of Engineering-----	--	--	4
Drawing and Designing-----	5	5	5
Valve Gears-----	2	--	--
Graphic Statics-----	--	2	2
Forge Shop-----	4	4	4
Analytical Geometry-----	5	--	--
Calculus-----	--	5	5
Electricity and Magnetism-----	3	--	--
Heat and Light-----	--	3	3
Physical Laboratory-----	4	4	4
English Literature-----	--	3	3
English History-----	3	--	--
Military Drill-----	3	3	3

## Senior Year.

Mechanics of Engineering-----	3	3	--
Mechanics of Machinery-----	--	3	--
Graphics of Mechanism-----	--	--	3
Machine Design-----	4	4	4
Boiler Design-----	2	2	2
Engineering Laboratory-----	4	4	4
Machine Shop-----	6	6	6
Hydraulics-----	--	3	3
Dynaino Machinery-----	3	--	--
Industrial Chemistry-----	--	--	2
Calculus-----	3	--	--
English-----	2	2	2
Political Economy-----	2	2	2
Military Science-----	1	1	1
Military Drill-----	3	3	3

*Total 17 hrs -*

## II. Short (or Manual) Course in Mechanic Arts (two years).

### First Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing -----	8	8	8
Shop -----	16	16	16
Arithmetic -----	5	5	5
Algebra -----	5	5	5
English Composition -----	3	3	3
American History -----	2	2	2
Military Drill -----	3	3	3

### Second Year.

Mechanical Technology -----	3	3	3
Drawing -----	8	8	8
Shop -----	18	18	18
Algebra -----	5	5	5
Geometry -----	5	5	5
Elementary Physics -----	2	2	2
Military Drill -----	3	3	3

III. Special Course. Boiler-tending, Engine-tending, and Dynamo-tending; Machine-work; Cotton-milling, Carpentry, Forging, Drawing, and Designing.

IV. Graduate Courses (2 years), leading to the Degree of Mechanical Engineer. These courses are arranged to suit each individual case.

## COURSE IN CIVIL ENGINEERING.

## I. Full Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing-----	4	--	--
Mechanical Drawing-----	--	4	4
Carpenter Shop-----	4	4	4
Forge Shop-----	2	2	2
Lathe Shop-----	2	2	2
Algebra-----	5	5	--
Geometry-----	--	--	5
Book-keeping-----	1	1	1
Elementary Physics-----	2	2	2
Physical Geography-----	--	--	2
Physiology-----	2	--	--
Rhetoric and Composition-----	3	3	3
History-----	2	2	2
Civics-----	--	2	--
Military Drill-----	3	3	3

## Sophomore Year.

Steam Engine-----	1	1	1
Mechanical Drawing-----	2	2	2
X Turning and Pattern Shop-----	5	5	5
Architecture-----	1	1	1
Architectural Drawing-----	4	4	4
Geometry-----	5	--	--
Trigonometry-----	--	5	--
Analytical Geometry-----	--	--	5
Mechanics-----	2	2	2
Inorganic Chemistry-----	3	3	3
Inorganic Chemistry (laboratory)-----	4	4	4
Higher Rhetoric-----	3	3	--
American Literature-----	--	--	3
Military Drill-----	3	3	3

## Junior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engineering-----	4	4	--
Mechanics of Engineering-----	--	--	4
Drawing and Designing-----	5	5	5
Valve Gears-----	2	--	--
Graphic Statics-----	--	2	2
X Forge Shop-----	4	4	4
Analytical Geometry-----	5	--	--
Calculus-----	--	5	5
Electricity and Magnetism-----	3	--	--
Heat and Light-----	--	3	3
Physical Laboratory-----	4	4	4
English Literature-----	--	3	3
English History-----	3	--	--
Military Drill-----	3	3	3

## Senior Year.

Mechanics of Engineering-----	3	3	--
X Engineering Laboratory-----	4	4	--
X Machine Shops-----	4	4	4
Hydraulics-----	--	3	3
Surveying-----	3	--	--
Railroad and Municipal Engineering-----	--	3	3
Surveying (field work)-----	4	4	8
Roofs and Bridges-----	4	--	--
Bridge Design-----	--	4	4
Industrial Chemistry-----	--	--	2
Calculus-----	3	--	--
X English-----	2	2	2
X Political Economy-----	2	2	2
Military Science-----	1	1	1
Military Drill-----	3	3	3

II. Graduate Course (2 years), leading to the Degree of Civil Engineer.

## COURSES IN ELECTRICAL ENGINEERING.

## I. Full Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Carpenter Shop -----	4	4	4
Forge Shop -----	2	2	2
Lathe Shop -----	2	2	2
Algebra -----	5	5	--
Geometry -----	--	--	5
Book-keeping -----	1	1	1
Elementary Physics -----	2	2	2
Physical Geography -----	--	--	2
Physiology -----	2	--	--
Rhetoric and Composition -----	3	3	3
History -----	2	2	2
Civics -----	--	2	--
Military Drill -----	3	3	3

## Sophomore Year.

Steam Engine -----	1	1	1
Mechanical Drawing -----	2	2	2
+ Turning and Pattern Shop -----	5	5	5
Architecture -----	1	1	1
Architectural Drawing -----	4	4	4
Geometry -----	5	--	--
Trigonometry -----	--	5	--
Analytical Geometry -----	--	--	5
Mechanics -----	2	2	2
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
Higher Rhetoric -----	3	3	--
American Literature -----	--	--	3
Military Drill -----	3	3	3

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## Junior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engineering -----	4	4	--
Mechanics of Engineering -----	--	--	4
Drawing and Designing -----	5	5	5
Valve Gears -----	2	--	--
Graphic Statics -----	--	2	2
✕ Forge Shop -----	4	4	4
Analytical Geometry -----	5	--	--
Calculus -----	--	5	5
Electricity and Magnetism -----	3	--	--
Heat and Light -----	--	3	3
Physical Laboratory -----	4	4	4
English Literature -----	--	3	3
English History -----	3	--	--
Military Drill -----	3	3	3

## Senior Year.

Mechanics of Engineering -----	3	3	--
Machine Design -----	4	4	4
Engineering Laboratory -----	4	--	--
✕ Machine Shop -----	4	4	4
Hydraulics -----	--	3	3
Dynamo Machinery -----	3	3	3
Electrical Laboratory -----	4	8	8
Industrial Chemistry -----	--	--	2
Calculus -----	3	--	--
English -----	2	2	2
Political Economy -----	2	2	2
Military Science -----	1	1	1
Military Drill -----	3	3	3

II. Graduate Course (two years), leading to the Degree of Electrical Engineer.

## COURSE IN CHEMICAL ENGINEERING.

For young men seeking employment in the analytical or engineering departments of the various chemical industries, such as the manufacture of soap, paper, leather, vegetable oils, glass, porcelain, illuminating gas, sulphuric acid, fertilizers, etc.

I. Full Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing-----	4	--	--
Mechanical Drawing-----	--	4	4
Carpenter Shop-----	4	4	4
Forge Shop-----	2	2	2
Lathe Shop-----	2	2	2
Algebra-----	5	5	--
Geometry-----	--	--	5
Book-keeping-----	1	1	1
Elementary Physics-----	2	2	2
Physical Geography-----	--	--	2
Physiology-----	2	--	--
Rhetoric and Composition-----	3	3	3
History-----	2	2	2
Civics-----	--	2	--
Military Drill-----	3	3	3

## Sophomore Year.

Steam Engine-----	1	1	1
Mechanical Drawing-----	2	2	2
+ Turning and Pattern Shop-----	5	5	5
+ Architecture-----	1	1	1
+ Architectural Drawing-----	4	4	4
Geometry-----	5	--	--
Trigonometry-----	--	5	--
Analytical Geometry-----	--	--	5
+ Mechanics-----	2	2	2
Inorganic Chemistry-----	3	3	3
Inorganic Chemistry (laboratory)-----	4	4	4
Higher Rhetoric-----	3	3	--
American Literature-----	--	--	3
Military Drill-----	3	3	3



## Junior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
✕ Steam Engineering -----	4	4	--
✕ Mechanics of Engineering -----	--	--	4
Drawing and Designing -----	5	5	5
Analytical Geometry -----	5	--	--
Calculus -----	--	5	5
Electricity and Magnetism -----	3	--	--
Heat and Light -----	--	3	3
Physical Laboratory -----	4	4	4
Qualitative Analysis -----	6	6	6
English Literature -----	--	3	3
English History -----	3	--	--
Military Drill -----	3	3	3

## Senior Year.

✕ Mechanics of Engineering -----	3	3	--
Machine Design -----	4	4	4
Engineering Laboratory -----	4	4	4
Hydraulics -----	--	3	3
Dynamo Machinery -----	3	--	--
Industrial Chemistry -----	2	2	2
Quantitative Methods -----	1	1	1
Quantitative Analysis -----	8	8	8
Theoretical Chemistry -----	--	--	2
English -----	2	2	2
Political Economy -----	2	2	2
Military Science -----	1	1	1
Military Drill -----	3	3	3

II. Graduate Course (two years), leading to the Degree of Chemical Engineer.

## COURSES IN TEXTILE INDUSTRY.

I. Full Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Carpenter Shop -----	4	4	4
Forge Shop -----	2	2	2
Lathe Shop -----	2	2	2
Algebra -----	5	5	--
Geometry -----	--	--	5
Book-keeping -----	1	1	1
Elementary Physics -----	2	2	2
Physical Geography -----	--	--	2
Physiology -----	2	--	--
Rhetoric and Composition -----	3	3	3
History -----	2	2	2
Civics -----	--	2	--
Military Drill -----	3	3	3

## Sophomore Year.

Steam Engine -----	1	1	1
Mechanical Drawing -----	2	2	2
Turning and Pattern Shop -----	5	5	5
Architecture -----	1	1	1
Architectural Drawing -----	4	4	4
Geometry -----	5	--	--
Trigonometry -----	--	5	--
Analytical Geometry -----	--	--	5
Mechanics -----	2	2	2
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
Higher Rhetoric -----	3	3	--
American Literature -----	--	--	3
Military Drill -----	3	3	3

## Junior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Cotton-milling -----	5	5	5
Cotton Machinery (practice) -----	6	6	6
Drawing and Designing -----	5	5	5
Analytical Geometry -----	5	--	--
Calculus -----	--	5	5
Organic Chemistry -----	2	2	2
Qualitative Analysis -----	4	4	4
English Literature -----	--	3	3
English History -----	3	--	--
Military Drill -----	3	3	3

## Senior Year.

Mechanics of Engineering -----	3	--	--
Mechanics of Machinery -----	--	3	--
Graphics of Mechanism -----	--	--	3
Machine Design -----	4	4	4
Cotton-milling -----	5	5	5
Cotton Machinery (practice) -----	8	8	8
Textile Chemistry and Dyeing -----	3	3	3
Textile Chemistry and Dyeing (laboratory) -----	3	3	3
English -----	2	2	2
Political Economy -----	2	2	2
Military Science -----	1	1	1
Military Drill -----	3	3	3

## II. Short (or Manual) Course (two years).

## First Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing -----	5	5	5
Shop -----	10	10	10
Cotton-milling -----	5	5	5
Cotton Machinery (practice) -----	6	6	6
Arithmetic -----	5	--	--
Algebra -----	--	5	5
English Composition -----	3	3	3
Military Drill -----	3	3	3

## Second Year.

Mechanical Technology -----	3	3	3
Drawing -----	8	5	5
Shop -----	2	2	2
Cotton-milling -----	5	5	5
Cotton Machinery (practice) -----	8	8	8
Algebra -----	5	5	--
Geometry -----	--	--	5
Physics -----	2	2	2
Military Drill -----	3	3	3

## III. Special Course in Mill-work and Mill Calculations.

## SUBJECTS OF INSTRUCTION.

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The following detailed statement of the subjects of instruction in the College is intended to supply minute information, not only for those who may pursue the regular courses heretofore described, but also for special students seeking instruction in only one or two subjects.

As a rule, students are required to pursue one of the regular courses of instruction, either a full course of four years or a short course of two years; but mature and experienced persons, under the guidance of the Faculty, may pursue special courses, embracing, if desired, only one subject. Such special students are excused from military exercises as well as from wearing the uniform, and are not expected to room in the College dormitories.

### AGRICULTURE.

1. **Elements of Agriculture.**—Bailey's *Principles of Agriculture*. Two hours, first term. Required of Sophomores. This is a very excellent introduction to the study of Agriculture, treating as it does of the formation of soils, tillage, fertilizers, forage crops, harvesting of crops, etc. It deals more in principles than in facts. Professor IRBY.

2. **Staple Crops.**—Lectures. Two hours, third term. Required of Sophomores. The most important crops of the State are described and discussed. The best methods of preparing the soil for the same, and the best cultivation and harvesting of crops. Professor IRBY.

3. **Farm Drainage.**—French's *Farm Drainage*. Four hours, first term. Required of Juniors. Farm drainage in all its phases is discussed: open ditches, pole drains, stone drains, plank drains, and last and best of all, tile drains. The students are taught to reconnoiter the ground, survey the land, take the levels, dig the ditches, and lay the tile. Professor IRBY.

4. **Meteorology.**—Davis. Four hours, third term. Required of Juniors in Agriculture. Especial attention is paid to the climatology of North Carolina. The students are made to realize the importance of a knowledge of this new science, and its relation to Agriculture. Professor IRBY.

**5. Experiment Station Methods.**—Three hours, third term. Required of Seniors in Agriculture. This consists in reviewing and discussing the leading State and United States bulletins. Professor IRBY.

**6. Agricultural Economics.**—Lectures. Four hours, third term. Required of Seniors. This consists of a course of lectures and is intended as a "cap stone" for the four years' course, as nearly all the subjects previously discussed are briefly reiterated and emphasized, especially the more practical subjects that have to deal with the business affairs of the farm. It is a final talk with the boys before they go out in the world to pursue their chosen vocations. Different styles of farming are discussed, such as special *vs.* diversified, intensive *vs.* extensive, and the arrangement of these are given somewhat in detail. Due attention is given to the selection, arrangement, equipment, and running of farms. Professor IRBY.

### ANIMAL INDUSTRY.

**1. Dairying.**—Wing's *Milk and its Products*. Two hours, second term. Required of Sophomores in Agriculture. This is a treatise on composition, secretion, testing, and fermenting of milk. Ripening of cream and finishing butter for the market. Mr. JOHNSON.

**2. Breeds of Live Stock.**—Curtis's *Horses, Cattle, Sheep, and Swine*. Five hours, third term. Required of Sophomores in Agriculture. This book gives the student a good general idea of the comparative merits of the different breeds of live stock on the farm.

The "make-up" of a horse is studied and discussed. Why some are strong, and others are fleet, how one breed is developed for the saddle, while another is for the heavy dray, and still another for the turf.

Why some cattle are better for the production of milk, or of butter, while others are adapted for beef production.

How the different breeds of sheep and hogs were developed for their several purposes.

Poultry is also discussed in this connection. Mr. JOHNSON.

**3. Dairy Bacteriology.**—Russell's *Dairy Bacteriology*. Three hours, second term. Required of Juniors in Agriculture. This course gives the student an idea how cream is ripened, and of the different microscopic developments, beneficial and otherwise, that are going on in the dairy. Mr. JOHNSON.

**4. Cattle-feeding.**—Lectures. Four hours, second term. Required

of Juniors in Agriculture. Reference books: Armsby, Stewart, and Henry. Topics: best feed stuffs, composition of feeds, balancing of rations, and best methods of caring for stock. Mr. JOHNSON.

**5. Veterinary Science.**—Law's. Three hours, third term. Required of Juniors in Agriculture. Only the most common diseases are discussed and their prevention and treatment given. Mr. JOHNSON.

**6. Stock-breeding.**—Miles. Four hours, second term. Required of Seniors in Agriculture. In this they learn the power and importance of heredity, atavism, law of correlation, cross-breeding, and grading. The importance of pedigrees and the keeping of official records is impressed on their minds. How the different breeds were produced, and how the different breeders' associations are formed and maintained. Professor IRBY.

**7. Practice Work.**—Four hours, third term. Required of Freshmen in Agricultural Course. Professor IRBY.

**8. Practice Work.**—Four hours, second and third term. Required of Sophomores in Agricultural Course. Work in barn, dairy, and field correlating with the work in the class-room. Judging cattle with the score-card, milking, feeding the stock, testing milk, running the separator and churn. Professor IRBY and Mr. JOHNSON.

**10. Practice Work.**—Four hours, first, second, and third terms. Required of Seniors in Agricultural Course. This includes work with stock, work and observation on different field operations, setting up and running of farm machinery, and planning various farm buildings. Professor IRBY.

## HORTICULTURE.

**1. Market Gardening.**—The theory and practice of growing vegetables in the open ground and under glass commercially. Lectures three hours during the first term. Required of Seniors in Agriculture. Mr. RHODES.

**2. Floriculture.**—Lectures on commercial floriculture, construction of horticultural buildings, green-house management and general trade methods. Three hours during the second term. Required of Seniors in Agriculture. Mr. RHODES.

**3. Landscape Gardening.**—Lectures on the history of garden art and styles of ornamental gardening, planning of country places and farm homes and improvement of grounds in general. Two hours, second term. Required of Juniors in Agriculture. Professor MASSEY.



4. **Forestry.**—Lectures on forest influences and methods of forest management, timbers, and forest products. Two hours, third term. Required of Juniors in Agriculture. Professor MASSEY.

5. **Green-house Propagation and Garden Practice.**—Four hours' first and second terms. Required of Sophomores in Agriculture. Mr. RHODES.

6. **Plant-breeding.**—Lectures on the improvement of cultivated plants by cross fertilization and selection. Three hours, third term. Required of Seniors in Agriculture. Mr. RHODES.

7. **Horticultural Practice.**—Green-house management and commercial methods. Two hours. Required of Seniors in Agriculture. Mr. RHODES.

8. **Pomology.**—Two hours during Winter term. Bailey's *Principles of Fruit Growing*. Mr. RHODES.

## MECHANICAL ENGINEERING.

a. **Free-hand Drawing.**—An elementary drill in the use of the pencil, beginning with simple forms. Sketches of objects, usually some piece of a machine. Four hours, first term. Required of all Freshmen. Mr. PRITCHETT and Mr. FENNELL.

1b. **Elementary Mechanical Drawing.**—Use of instruments. Drawing practice on elementary machine pieces. Elementary projections. Drawings made to scale, from working sketches of pieces of machines. Four hours, second and third terms. Required of all Freshmen. Mr. PRITCHETT and Mr. FENNELL.

1c. **Mechanical Drawing.**—Isometric sketches from mechanical drawings. Elements of machine designs. Working sketches and drawings of simple machine parts from the model. Shadow lines. Two hours. Required of Sophomores in Engineering and in Textile Industry. Mr. PRITCHETT.

1d. **Drawing and Designing.**—Making working sketches, finished drawings, tracings and blue prints, from the tools and machines in the laboratories. Designing parts of tools or some piece of mechanism. Five hours. Required of Juniors in Engineering and in Textile Industry. Professor SCRIBNER and Mr. FENNELL.

2a. **Carpenter Shop.**—Bench work in wood. (Instruction in care and use of tools. Principle of the cutting edge). Exercises made from working drawings, involving use of various tools, fitting of joints, etc. Making and finishing simple articles. Four hours. Required of all Freshmen. Mr. PRITCHETT.

2b. **Lathe Shop.**—Use of wood lathe. Care and adjustment of



parts. Care of shafting, pulleys, and belting. Care of lathe tools. Form and position of cutting edges. Uses of different tools. Elementary exercises in wood-turning. Two hours, first and second terms. Required of all Freshmen. Two hours, third term. Required of Freshmen in Engineering, in Textile Industry, and in Science. Mr. SMITH.

**2c. Wood-working and Pattern Shop.**—Use and care of wood-working machinery. Nature and use of different kinds of wood. Exercises made from working drawings on lathes and other tools. Principles of pattern-making. Construction of various patterns. Five hours. Required of Sophomores in Engineering, and in Textile Industry. Mr. SMITH.

**3a. Forge Shop.**—The names, uses, and care of ordinary forge tools. The fire, its preparation. Effect and adjustment of blast, proper use and economy of fuel. Characteristics of wrought iron, how affected by heat; forging; welding; burning. Practice in making simple exercises by forging and welding of iron. Two hours, first and second terms. Required of all Freshmen. Two hours, third term. Required of Freshmen in Engineering and in Textile Industry. Mr. PARK.

**3b. Forge Shop.**—Effect of heat on iron and steel, theory of welding, and use of fluxes. Hard and soft steel, welding, hardening and tempering steel, tool-temper, spring-temper, case hardening. Practice in making iron and steel tools and difficult forging and welding and tempering. Four hours. Required of Juniors in Mechanical, Civil and Electrical Engineering. Mr. PARK.

**3c. Machine Shop.**—Bench and machine work in iron, steel, and brass. Use and care of hand tools, and machine tools. Care of bearings, shafting, belting, pulleys, and similar accessories. Cutting tools; proper form and position of the cutting edge; speed and weight of cutting with different materials. Simple exercises in turning, planing, gear-cutting, etc., construction of parts of a steam-engine, dynamo, or some other machine, or of laboratory apparatus involving machine tool work. Six hours. Required of Seniors in Mechanical Engineering. Four hours. Required of Seniors in Civil and Electrical Engineering. Mr. PARK.

**4. Steam-engine.**—Descriptive study of Engines and Boilers, covering the details of cylinders, pistons, valves, connecting-rods, bed plates, foundations, and the ordinary types of boilers with their settings. Holmes' *The Steam Engine*, supplemented by sketching from cuts, drawings, and such engines and boilers as are accessible. One

hour. Required of Sophomores in the Engineering and Textile courses. Professor SCRIBNER.

**5. Valve Gears.**—General theory of the slide-valve and link motions, and its application in the study and design of the valve mechanism of steam-engines; problems and exercises. McCord's *The Slide Valve*. Two hours, first term. Required of Juniors in Mechanical, Civil, and Electrical Engineering. Mr. FENNELL.

**6. Steam Engineering.**—Nature and measurement of heat, its effect on gases and water, theory of the Steam-engine. Expansion and cushioning, indicator-cards, simple and compound engines, the condenser, steam-jacket, steam-engine efficiencies. Mechanics of the reciprocating parts, fly-wheel and governor, various types—such as the plain slide-valve; the Corliss; the high-speed automatic engine. Types of boilers, materials used, construction, staying, settings, furnaces and chimneys, fittings and appliances, boiler power, use and care of boilers, fuels and combustion, corrosive and incrustation. Holmes' *Steam Engine*, Peabody and Miller's *Steam Boilers*, lectures, and reference books. Four hours, first and second terms. Required of Juniors in Engineering. Professor SCRIBNER.

**7. Boiler Design.**—Determination of proper proportions for grate and heating surfaces, area and length of flues and tubes, diameter and thickness of shell, arrangement and proportions of stays, etc., for various forms of boilers. Making sketches and working drawings from original designs (Wilson, Peabody & Miller, Barr, etc.). Each student is required to design every part of a boiler after one of the well-known types, stationary, marine or locomotive (no two having the same), and to make complete working drawings and tracings. Two hours. Required of Seniors in Mechanical Engineering. Professor SCRIBNER.

**8. Steam-engine Design.**—Determination of the proper proportions for cylinders, valves, pistons, rods, shafts, fly-wheels, etc. Making rough sketches and working drawings from original designs. Unwin's *Machine Design*, Part II. Each student is required to design the principal parts of an engine after one of the well-known types, calculating the parts when the question of strength enters, and following the general design of the chosen type when the proportions are matters of experience. Two hours, for Post-graduates. Professor SCRIBNER.

**9. Mechanics of Machinery.**—Application of the laws of forces to machines, determination of motive or driving forces, including consideration of acceleration, inertia, friction, wear, and efficiency

by use of analytical methods; solution of problems. Kennedy's *Mechanics of Machinery*, also lecture notes and reference books. Three hours, second term. Required of Seniors in Mechanical Engineering and Textile Science. Professor SCRIBNER.

**10. Graphics of Mechanism.**—Analysis of the action of forces on machines, as in 9, by the use of graphical methods. Hermann's *Graphic Statics of Mechanisms*. Also Weisbach and reference books. Three hours, third term. Required of Seniors in Mechanical Engineering and in Textile Industry. Professor SCRIBNER.

**11. Mechanics of Engineering.**—Nature and measure of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Study of materials, law of stress and strain, bending and resisting moments, shear and moment diagrams, shear and elastic curves of cantilever, simple, restrained, and continuous beams, column formulas, torsion, maximum, internal stresses, common flexure theory tested by experiment, problems in beams, analysis and design, specifications. Church's *Mechanics of Engineering*. Four hours, third term. Required of Juniors in Engineering. Three hours, first and second terms. Required of Seniors in Engineering and Textile courses, and in Science, taking group A. Professor SCRIBNER.

**12. Machine Design.**—Complete design and drawing of some piece of mechanism, involving cam motion, gearing, etc., design of some piece of machinery, such as a punch, shears, riveting machine, crane, pump, hoist, water-motor, etc., studies and sketches of existing machines, determination of dimensions according to practice. *Unwin, Reuleaux, Kent, Haswell, Klein, Weisbach, Richards*, etc. Four hours. Required of Seniors and Post-graduates in Mechanical, Chemical and Electrical Engineering, and in Textile Industry. Professor SCRIBNER.

**13. Engineering Laboratory.**—Determination of leverages and velocity ratios, manipulation of laboratory apparatus, testing gauges, indicator springs, dynamometers, weirs, boilers, engines, pumps, investigation of efficiencies of hoists, screws, etc., tests of materials for strength, co-efficient of friction. Four hours. Required of Seniors and Post-graduates in Mechanical and Chemical Engineering. Four hours, first and second terms. Required of Seniors in Civil Engineering. Four hours, first term. Required of Seniors in Electrical Engineering. Professor SCRIBNER and Mr. FENNELL.

**14. Thermodynamics.**—Mechanical theory of heat. Application

to steam, air and gas-engines, and refrigerating machinery. Two hours, for Post-graduates. Professor SCRIBNER.

**15. Hydrodynamics.**—The design of reaction and impulse turbines, measurement of flowing water, description and discussion of experiments. Hydraulic pressure engines. Bodmer's *Hydraulic Motors*. Two hours, for Post-graduates. Professor SCRIBNER.

## CIVIL ENGINEERING.

**1. Graphical Statics.**—Determination of stresses in frame structures by the graphical methods. Two hours, second and third terms. Lectures and original problems. Required of Juniors in Mechanical, Civil and Electrical Engineering. Professor RIDDICK.

**2. Surveying.**—Land surveying, leveling, elements of triangulation, topographical surveying, railroad surveying, road-making. Three hours, first term. Text-book and lectures. Required of Seniors in Civil Engineering and of Juniors in Agriculture. Professor RIDDICK.

**3. Surveying, Field Work.**—Use of instruments, compass level, transit and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes and platting. Four hours, first term. Required of Seniors in Civil Engineering and of Juniors in Agriculture.

**4. Railroad and Municipal Engineering.**—Three hours, second and third terms. Searles' *Field Engineering*. Lectures. Required of Seniors in Civil Engineering. Professor RIDDICK.

**5. Railroad and Municipal Engineering.**—Field work. Four hours, second term; eight hours, third term. Required of Seniors in Civil Engineering. Professor RIDDICK.

**6. Roofs, Bridges, and Arches.**—Determination of stresses in roof and bridge trusses by the analytical method, design, and construction of arches, roofs, and bridges. Merriman's *Roofs and Bridges*. Original problems. Four hours, throughout the year. Required of Seniors in Civil Engineering. Professor RIDDICK.

**7. Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Three hours, second and third terms. Text-book, Merriman's *Hydraulics*. Required of Seniors in Engineering. Professor RIDDICK.

## ELECTRICAL ENGINEERING.

**1. Dynamo Machinery.**—Practical units. Dynamo-electric machines. Dynamos. Motors and transformers. Efficiency of machines. Installation and care of machinery. Calculations for wiring. Purchase of machinery. Three hours, first term. Required of Seniors in Mechanical, Electrical, and Chemical Engineering. Three hours, second and third terms. Required of Seniors in Electrical Engineering. Mr. STANSEL.

**2. Electrical Engineering Laboratory.**—Measurements of power; efficiency of tests; characteristic curves; standardizing of measuring instruments; photometry. Four hours, first term; eight hours, second and third terms. Required of Seniors in Electrical Engineering. Mr. STANSEL.

## ARCHITECTURE.

**1. Architecture.**—Building materials, method of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. One hour throughout the entire year. Required of Sophomores in all courses. Professor RIDDICK.

**2. Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Four hours, first term. Required of all Sophomores. Four hours, second and third terms. Required of Sophomores in Engineering, in Science, and in Textile Industry. Mr. Foy.

## TEXTILE INDUSTRY.

**1. Cotton Manufacturing (for Juniors).**—Picking machinery. Cards. Revolving-flat and top-flat compared. Drawing-frames and railway-heads. Slubbers, intermediates, speeders, and jacks. Spinning-frames. Spoolers, warpers, slashers, and looms. Twisters and reels. The proper drafts, speeds, and production of above machines. Different makes compared. Principles of construction explained.

**2. Cotton Milling (for Juniors).**—Effect of excessive and deficient speed of pickers and cards. Card-grinding. Importance of good grinding. Different methods of grinding. Comparison of work with different speeds and drafts of railway-heads and drawing-frames. Metallic rolls. Effect of excessive draft on speeders. Proper speed of spinning-frames for different work. Exhaustive experiments regarding strength and elasticity of yarn. Practical work on spoolers,



warpers, and slashers. Wet and dry twisting. Weaving. Hand and power looms. Loom-fixing. Practical work in cloth-room.

**3. Cotton Manufacturing** (for Seniors).—Advanced study of card-room machinery. Principles of construction. Study of combers, doublers, and lap machines. Methods of making roving for fine yarn. The mule. Detailed study of different motions. More advanced study of twistors, spoolers, warpers, and slashers. Sizing. Necessary properties of sizing materials.

**4. Cotton Milling** (for Seniors).—Exhaustive experiments regarding setting of cards and methods of grinding. Changing machines for making different numbers of roving. Proper adjustment for Sea-island and other long staple cottons. Detailed work on combers. Spinning fine yarns on spinning-frames. Spinning hosiery yarn on mules and frames. Slashing fine yarn. Test of different sizing compounds. Cone-winding, reeling, and Dunn warping. Different methods of preparing yarn and cloth for the market. Details of selling yarn and cloth.

**5. Designing** (for Seniors).—Designing twills. All kinds of twill motions explained. Box-looms. Weaving with dobies. Leno weaving. The Jacquard loom. Harmony of colors. Fancy weaving on hand and power looms.

**6. Mill Engineering** (for Seniors).—Proper speed, draft, and production of all machines. Necessary number and size of different machines. Floor space necessary. Proper arrangement in the mill. Arrangement and size of shafting, pulleys, and belts. Rope transmission. Water, steam, and electric power considered. Proper conditions for use of each. Amount of fuel and water necessary. Arrangement of buildings. Detailed plan of construction. Fire protection. Electric lighting. Different methods of heating. Sanitary arrangements. Cost of buildings. Detailed plans for tenement houses.

## MATHEMATICS.

**1. Arithmetic.**—Begin with decimal fractions and complete the subject. Five hours, first term. Milne's *Standard Arithmetic*. Required of first year students in short courses. Mr. YATES and Mr. WRIGHT.

**3. Advanced Algebra.**—Begin at quadratic equations, general theory of equations, solution of higher equations, etc. Five hours, first and second terms. Wells' *Higher Algebra*. Required of all Freshmen in regular courses, and of second year students in short

courses in Mechanic Arts and Textile Industry. Mr. YATES and Mr. WRIGHT.

**4. Geometry.**—Plane and solid. Five hours, third term. Required of all Freshmen in regular courses, and of second year students in short courses in Mechanic Arts and Textile Industry. Five hours, first term. Required of all Sophomores. Wentworth's *Plane and Solid Geometry*. Mr. YATES.

**5. Trigonometry.**—Five hours, second term. Required of all Sophomores. Mr. YATES.

**6. Analytical Geometry.**—Conic sections, higher plane curves, Geometry of three dimensions. Five hours, third term of Sophomore year, and first term of Junior year. Required of students in Engineering, and Textile Industry. Nichols' *Analytical Geometry*. Mr. YATES.

**7. Calculus.**—Differential and integral elements of differential equations. Five hours, second and third terms of Junior year. Required of students in Engineering, in Science, and in Textile Industry. Three hours, first term of Senior year. Required of students in Mechanical, Civil, and Electrical Engineering. Taylor's *Elements of Calculus*. Professor RIDDICK.

**8. Book-keeping.**—The work in the text-books supplemented by numerous original examples and sets for practice. One hour. Required of all Freshmen. Mr. YATES.

## PHYSICS.

**1. Elementary Physics.**—Fundamental units of measurement. British and metric standard measures. Properties of matter. Definitions of force, work, and power. Laws of motion. Principles of machines. Mechanics of fluids. Sound. Introduction to the study of heat and light. Two hours. Required of all Freshmen. Professor WEIHE.

**2. Mechanics.**—Kinematics, force, work, friction, energy, composition and resolutions of forces, moments. Centre of gravity. Two hours. Required of Sophomores in Engineering and Textile Industry. Professor WEIHE.

**3. Electricity and Magnetism.**—Frictional electricity. Electrostatics. Magnetism. Current electricity. Ohm's law. Joule's law. Electromagnetics. Electrical measurements. Principles of electrical machines. Three hours, first term. Required of Juniors in Engineering. Mr. STANSEL.

**4. Heat and Light.**—Heat: Properties of heat; thermometry; calorimetry; property of gases; thermodynamics. Light: Properties of light; reflection; refraction; photometry. Three hours, second and third terms. Required of Juniors in Engineering. Professor WEIHE.

**5. Physical Laboratory.**—Measurement of length, area, and volume, weighing, determinations of density; laws of force and velocity; pendulum. Electric and magnetic measurements. Four hours. Required of Juniors in Engineering. Professor WEIHE and Mr. Foy.

## CHEMISTRY.

**1a. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. Three hours. Required of all Sophomores. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures and recitations are illustrated with experiments and the exhibition of specimens. Professor WITHERS and Dr. FRAPS.

**1b. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. Four hours. Required of all Sophomores. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Mr. SYME.

**2. Qualitative Analysis.**—Laboratory work. Caldwell's *Chemical Analysis*. Six hours. Required of Juniors in Agriculture and in Chemical Engineering. Four hours. Required of the Juniors in Textile Industry. The student is taught to detect the presence of the more common elements in unknown substances. Stress is laid upon the principles involved in the tests. Mr. SYME.

**3a. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. Two hours. Required of Juniors in Agriculture and in Textile Industry. The fundamental principles of organic chemistry and the more important compounds are taken up. Dr. FRAPS.

**3b. Organic Chemistry.**—Laboratory work. Orndorff's *Laboratory Manual*. Six hours. Elective for Post-graduates in Chemistry. This work is designed to familiarize the student with the more important organic compounds, and with the processes involved in their preparation. Dr. FRAPS.

**4. Theoretical Chemistry.**—Meyer's *Outlines of Theoretical Chem-*



istry. Two hours, third term. Required of Seniors in Chemical Engineering. Professor WITHERS.

**5. Quantitative Methods.**—One hour. Required of Seniors in Agriculture and in Chemical Engineering. A discussion of the methods and principles involved in quantitative analysis. Professor WITHERS.

**6a. Quantitative Analysis.**—Laboratory work. Six hours. Required of Seniors in Agriculture. Eight hours. Required of Seniors in Chemical Engineering. After the completion of the determinations given in Caldwell's *Chemical Analysis* the work of the student is arranged to correspond with his course of study. Professor WITHERS and Mr. BIZZELL.

**6b. Quantitative Analysis.**—Laboratory work. A continuation of 6a. Elective for Post-graduates in Chemistry. Professor WITHERS.

**7. Agricultural Chemistry.**—Three hours, first and second terms. Required of Seniors in Agriculture. Attention is given to a consideration of the atmosphere as a plant-feeder; the constituents of the plant and their functions; the chemistry of soils and fertilizers; the preparation of manures and composts; the composition of feeding stuffs; the principles of feeding animals, etc. Professor WITHERS.

**8a. Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry*. Two hours, first and second terms. Required of Seniors in Chemical Engineering. A discussion of the processes and principles involved in the more important chemical industries. Professor WITHERS.

**8b. Industrial Chemistry.**—Two hours. Required of Seniors in Engineering. A discussion of the materials of engineering. Professor WITHERS.

**9a. Textile Chemistry and Dyeing.**—Lectures. Reference book, Hummel's *Dyeing of Textile Fabrics*. Three hours. Required of Seniors in Textile Industry. A study of the chemistry of the cotton fiber and the principles involved in bleaching, dyeing, and printing. Dr. FRAPS.

**9b. Textile Chemistry and Dyeing.**—Laboratory work. Three hours. Required of Seniors in course in Textile Industry. The experiments are designed to accompany course 9a. Dr. FRAPS.

Post-graduates in chemistry may take any of the subjects given above, which were not taken by them as under-graduates.

## GEOLOGY.

1. **Physical Geography.**—Two hours, third term. Required of all Freshmen. Lectures on agencies instrumental in the formation of strata, including geographical distribution of vegetable and animal life over the earth's surface. Professor MASSEY.

2. **Geology**, with special reference to Palaeontology. Two hours. Required of Juniors in Agriculture. Mr. HYAMS.

## BOTANY.

1. **Plant Morphology.**—Four hours' practice, third term. Required of Freshmen in Agriculture. Mr. HYAMS.

2. **Structural Botany.**—Two hours, first term. Bailey's *Lessons with Plants*. Required of Sophomores in Agriculture. Mr. HYAMS.

3. **Physiological Botany.**—Lectures. Two hours, first term. Required of Juniors in Agriculture. Professor MASSEY.

4. **Botanical Laboratory.**—Systematic Botany and Histology. Four hours. Required of Juniors in Agriculture. Mr. HYAMS.

5. **Biology.**—Lectures one hour, and Laboratory work five hours through the year. Dodge and Huxley and Martin. Professor MASSEY.

6. **Elements of Bacteriology.**—Abbott. Elective for Post-graduates. Professor MASSEY.

## ZOOLOGY.

1. **Economic Entomology.**—Two hours, second and third terms. Required of Sophomores in Agriculture. Mr. HYAMS.

2. **Entomology.**—Field and laboratory work in the collection and identification of insects and the formation of collections. Four hours, third term. Required of Sophomores in Agriculture. Mr. HYAMS.

3. **Human Physiology.**—Lectures. Two hours, first term. Required of all Freshmen. Lectures will be illustrated by charts and models. Professor IRBY.

4. **Vertebrate Zoology.**—Packard. Four hours, first term. Required of Seniors in Agriculture. This gives them a good general idea of the classification of the animal kingdom, and enables them to study and appreciate animal life, and the benefits of the animal kingdom to man. Mr. JOHNSON.

## ENGLISH.

1. **Introductory Rhetoric and Composition.**—Hill's *Foundations of Rhetoric* and Buehler's *Exercise Book* are used as texts. These are accompanied by drill on the forms of the language, and in the formation of correct sentences. Compositions, abstracts or outlines are required weekly. Students are taught to plan all work, and earnest effort is made to develop their constructive faculties. Three hours. Required of all Freshmen. Professor HILL and Mr. WRIGHT.

2. **Rhetoric.**—Genung's *Rhetoric*. Painsstaking sentence and paragraphic study. Study of themes in narration and description. Many exercises in planning the organic parts of a composition. Three hours for first and second terms. Required of all Sophomores. Professor HILL.

3. **American Literature.**—By means of text-books and as far as possible by parallel reading, students are introduced to what is best in American Literature. An endeavor is made to study books at first hand. Three hours, third term. Required of all Sophomores. Professor HILL.

4. **English Literature.**—The development of English literature in its great periods and through its most representative men. Much parallel reading. Three hours, second and third terms. Required of all Juniors. Professor HILL.

5. **Studies in Classic Prose.**—A critical study of the methods and styles of some English masters. In a general way Minto's plan of prose study is followed. Two hours, one term. Required of all Seniors. Professor HILL.

6. **Practice in Expository and Argumentative Themes.**—Two hours, one term. Required of all Seniors. Professor HILL.

## HISTORY.

1. **Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two hours. Required of all Freshmen.

2. **English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Three hours, first term. Required of all Juniors.

## CIVICS AND POLITICAL ECONOMY.

1. **Civics.**—This course gives a brief view of the State and Federal Governments, their functions and practical workings, together with a full consideration of the rights and duties of citizenship. Instruction is given by lectures and text-books. Required of Freshmen. Second term, two hours. President WINSTON.

2. **Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Seniors. One year, two hours. President WINSTON.

## MILITARY SCIENCE.

**Drill.**—Schools of the Soldier, Company, and Battalion in close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours. Required of all classes. Commandant and officers of the Battalion.

**Tactics.**—Theoretical instruction in the Schools of the Soldier, Company, and Battalion in Close and Extended Order; Ceremonies, etc. One hour. Required of all Seniors. Mr. STANSEL.

## EQUIPMENT FOR INSTRUCTION.

The College possesses the following equipment for instruction:

**In Agriculture.**—The farm includes six hundred acres, with one hundred under cultivation, a large basement barn, 50x72 feet, three stories; first floor occupied by cattle; second story by horses, machinery, tools, grain bins, etc.; third story, by hay, which is elevated by a Ricker & Montgomery hay-carrier. Just outside the barn are two seventy-ton circular silos. These are connected with a No. 18 Ohio Standard feed and ensilage cutter. The power for cutting is supplied by an eight-horse power Skinner engine. The dairy building contains three rooms and a cellar, besides a large room above, used as an Agricultural Society hall, in which the students' Agricultural Society meets on Saturday nights. The dairy is supplied with a De Laval Separator, Babcock Tester, rectangular churn, butter-worker, cheap heating apparatus, etc. The cellar is cemented, and has a cemented trough on one side, through which flows water from a spring situated above the dairy. This is an abundant water supply, and serves a useful purpose in ripening cream.

The live stock consists of two grade percheron mares, two mules, a few specimens of pure bred Jersey, Guernsey, Short-horn and Holstein-Friesian cattle, with their grades, and purchased native and grade cows. Poland China swine are bred pure and from high-class specimens, from which breeding stock will be sold as a part of the farm productions.

The poultry yards contain the following breeds: Black Langshans, White and Silver-laced Wyandottes, White and Barred Plymouth Rocks, Black Minorcas, Leghorns, and Pekin Ducks.

**Horticulture.**—Twenty-three acres of land comprise the Horticultural Experiment farm. There is ample equipment of barns, silos, stock, and machinery. There are five communicating green-houses separated by glass partitions so that different night temperatures can be maintained to suit the various purposes to which the houses are devoted. In addition, there is one glass structure, without heat, for the culture of foreign grapes. Here is kept a general collection of plants for botanical study and for practice in Floriculture, and in two of the houses, winter forcing of vegetables and fruits is carried on, in order that the students may have practice in a line of work that is rapidly assuming commercial importance in the State. The building and green-houses are heated in the most complete manner by hot water.

The entire basement of Primrose Hall is used as a Horticultural Laboratory, where practice in grafting, potting, and cross fertilization of plants is constantly going on.

**Botany.**—The Botanical Laboratory is equipped with sixteen compound microscopes of the best American and European makes, a supply of dissection lenses, and chemicals and staining fluids used in histological work. The Herbarium is fairly good, and is being added to by collections and exchanges. The collection of weed seeds and of cultivated plants is very full, and is an important factor in the acquirement of a knowledge of the appearance of various seeds and fruits. It is intended, as rapidly as possible, to fully equip the laboratory for advanced work in bacteriology.

**In Chemistry.**—The chemical laboratories are in the main building. They are supplied with fume closets, evaporating baths, drying chambers, blast lamps, and extra tile-covered tables. The tables are of yellow heart-pine, with oak tops. Each student is provided with one large and two small drawers, and one cupboard for keeping apparatus. Each working space is provided with gas, distilled water, re-agents, and a sink. The laboratory of quantitative analysis will



accommodate thirty-two students, sixteen of whom may work simultaneously, and the laboratory of general chemistry will accommodate fifty-six students, twenty-eight of whom may work simultaneously.

The chemical library contains a carefully selected list of standard reference books and chemical journals, which the more advanced students are expected to use very freely.

**In Physics and Electrical Engineering.**—The recitation-rooms and laboratories of the Department of Physics and Electrical Engineering are situated in the basement of the principal building. They are spacious, well lighted and provided with a number of solid brick piers, built directly on the ground. A dark room for general optical work, and particularly for photometric measurements, has been provided.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements and testing. The instruments are all up-to-date and well selected, and are particularly efficient for work in electricity.

In the electrical engineering laboratory are one series, one shunt and one compound dynamo, and two alternators. Connections have also been made with the electric plant of the city of Raleigh, enabling more advanced students to do some testing with strong currents and three-phase currents. The electric light plant of the College is also used for commercial testing.

The department possesses a very good library of standard books on all branches of physics. The students are referred to them in their work.

**In Civil Engineering** there is a complete equipment of all instruments necessary to civil engineering field work.

**In Mechanical Engineering.**—The drawing and recitation-rooms, laboratory and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are a recitation-room, engineering laboratory, machine shop, forge shop, wood-turning shop, and carpenter shop. On the second floor are the office, three drawing-rooms, a recitation-room, and a library. In the latter various scientific and technical journals are kept on file, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required. In this way modern engineering practice is made in a measure familiar.

The laboratory is provided with the necessary apparatus for making boiler and engine tests and other work of an experimental character. The equipment consists of a two-horse power engine, a ten-horse power engine (both of which were built by the students), a large Ericsson hot-air pumping engine, a machine for testing belt friction, apparatus for making analysis of flue gases, a hydraulic ram, a large Sturtevant fan and engine, a small water-motor, a Worthington water-meter, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calimeters, a Crosby gauge tester, tanks, scales, and other apparatus for making tests.

In addition to the laboratory, there is a boiler-house equipped with three thirty-horse power boilers, several pumps, and a jet condenser, all of which are available for experimental purposes.

The shops are equipped as follows:

The carpenter shop contains thirty-four carpenters' benches and all the necessary tools for each bench.

The wood-turning shop contains ten 12-inch swing lathes, a saw and dado machine, a 20-inch planer, a mortising and boring machine, a 30-inch band saw, a large jig saw, a 6-inch sticker, a mitering machine, a grindstone, a steam glue-pot, and six benches equipped with iron vises and all the tools necessary for pattern-making. Each lathe is fully equipped with turning tools.

The forge shop contains twenty-three forges, each of which is provided with an anvil and forging tools, besides which there is a full equipment for general use in the shop.

The machine shop contains a 16-inch-swing Davis & Eagan lathe with 10-foot bed, a 14-inch Winsor lathe with 3-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 24-inch upright Bickford drill press, a Brown and Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, a large emery tool grinding machine and six vises with benches and lockers.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by a 25-horse-power Woodbury engine. When the shops are running one of the students has charge of the engine and another of the boilers.

**The Main Building** is of brick, with brownstone trimmings, and is 70 by 60 feet; part four stories in height, and the remainder two. The lower floors contain the offices of the President and the Bursar; the library; several recitation-rooms; chemical and physical labora-

tories, the chapel, and the armory. The upper stories are occupied by students.

In this, as in the other buildings, every precaution has been taken to secure good sanitation. The rooms are all well lighted, well ventilated, and conveniently arranged.

**The Engineering Building** is a plain, substantial, two-story brick building, with large annex. It contains the laboratories, drawing-rooms and recitation-rooms, and shops of the department.

**The Boiler-house** is a single-story brick building, containing boilers, fire-pumps, and the machinery connected with the steam-heating plant.

**Primrose Hall and Plant-houses** is a two-story brick building, which has attached a fine range of glass structures. The lower, or basement floor, is occupied by the Horticultural laboratory and boiler-room. The upper floor contains a large lecture-room and a laboratory. The plant-houses are five in number, and are immediately accessible from the lecture-rooms and laboratories.

**The Dairy and Barn** are frame buildings, of modern design, and carefully planned for the purposes to which they are devoted. The barn is 50 by 72 feet and three stories high; the dairy is 20 by 40 feet and two stories high, the upper story being used as the Agricultural Society hall.

**The Library and Reading-room** now contain about three thousand books and magazines. Additions are being made every year, and the way now seems clear for rapidly increasing the numbers.

There are reference libraries for the use of students in the departments of Agriculture, Horticulture, Chemistry, Physics, English, Mechanical and Civil Engineering.



## CATALOGUE OF STUDENTS.

### GRADUATES.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>	<i>Major Course.</i>
JOHN HENDERSON BIRDSONG,	Raleigh,	Wake,	Chemistry.
B. S. '99, N. C. College of Agriculture and Mechanic Arts.			
BENJAMIN CARY FENNELLS,	Raleigh,	Wake,	Mech. Eng.
B. S. '98, N. C. College of Agriculture and Mechanic Arts.			
FRANCIS MARION FOY, JR.,	Scott's Hill,	Pender,	Elect. Eng.
B. S. '99, N. C. College of Agriculture and Mechanic Arts.			
CARROLL LAMB MANN,	Engelhard,	Hyde,	Civil Eng.
B. S. '99, N. C. College of Agriculture and Mechanic Arts.			
EUGENE LEROY PARKER,	Raleigh,	Wake,	Chemistry.
B. S. '99, N. C. College of Agriculture and Mechanic Arts.			
ANDREW THOMAS SMITH,	Oxford,	Granville,	Mech. Eng.
'99, N. C. College of Agriculture and Mechanic Arts.			
NUMA REID STANSEL,	Allenton,	Robeson,	Elect. Eng.
B. S. '98, N. C. College of Agriculture and Mechanic Arts.			
GEORGE FREDERICK SYME,	Raleigh,	Wake,	Civil Eng.
B. S. '98, N. C. College of Agriculture and Mechanic Arts.			
WILLIAM ANDERSON SYME,	Raleigh,	Wake,	Chemistry.
B. S. '99, N. C. College of Agriculture and Mechanic Arts.			

### SENIOR CLASS.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
KEMP ALEXANDER,	Harrisburg,	Cabarrus.
LESLIE LYLE ALLEN,	Louisburg,	Franklin.
ROBERT LINN BERNHARDT,	Salisbury,	Rowan.
LESLIE GRAHAM BERRY,	Washington,	Beaufort.
JAMES HARRY BUNN,	Henderson,	Vance.
PAUL COLLINS,	Raleigh,	Wake.
JAMES BAKER HALL, JR.,	Scotland Neck,	Halifax.
SAMUEL MERRILL HANFF,	Raleigh,	Wake.
GEORGE ROLAND HARRELL,	Kelford,	Bertie.
MARION MORGAN HARRIS,	Fairfield,	Hyde.
WILLIAM THEOPHILUS HINTON,	Greensboro,	Guilford.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
HENRY ALLEN HUGGINS,	Wilmington,	New Hanover.
GARLAND JONES, JR.,	Raleigh,	Wake.
LOUIS HENRY MANN,	Middleton,	Hyde.
ROBERT HALL MORRISON,	Mariposa,	Lincoln.
WILLIAM MONTGOMERY PERSON,	Kittrell,	Vance.
JUNIUS EDWARD PORTER,	Emerson,	Bladen.
ROGER FRANCIS RICHARDSON,	Selma,	Johnston.
WILLIAM EDWIN ROSE,	Statesville,	Iredell.
FLOYD DEROSS,	Charlotte,	Mecklenburg.
IRA OBED SCHAUB,	Culler,	Stokes.
JOHN WADE SHORE,	Booneville,	Yadkin.
WILLIAM TURNER SMITH,	Godwin,	Cumberland.
THOMAS FULLER TERRELL,	Raleigh,	Wake.
SIMPSON ALEXANDER VEST,	Tobaccoville,	Forsyth
ROSCOE MARVIN WAGSTAFF,	Olive Hill,	Person.
GAITHER HALL WHITING,	Raleigh,	Wake.

## JUNIOR CLASS.

FLETCHER HESS BARNHARDT,	Norwood,	Stanly.
WILLIAM OSBORNE BENNETT, JR.,	Wadesboro,	Anson.
FRED WILHELM BONITZ,	Wilmington,	New Hanover.
ZOLLY MOSBY BOWDEN,	Redland,	Davie.
WILLIAM DUNN BRIGGS,	Raleigh,	Wake.
WILLIAM PESCUDE CRAIGE,	Marion,	McDowell.
WILLIAM LOIS CRAVEN,	Concord,	Cabarrus.
FELIX GRAY CRUTCHFIELD,	Winston,	Forsyth.
GEORGE MASLIN DAVIS,	Greensboro,	Guilford.
WILLIAM DOLLISON FAUCETTE,	Halifax,	Halifax.
BENJAMIN OLIVER HOOD,	Asheville,	Buncombe.
MARTIN KELLOGG,	Sunbury,	Gates.
JESSE JAMES LILES,	Wadesboro,	Anson.
LEWIS OMER LOUGEE,	Raleigh,	Wake.
COLON REID LOVE,	Mandale,	Chatham.
JOHN LUTHER MCKINNON,	Laurinburg,	Richmond.
CHARLES HARDEN MCQUEEN,	Morven,	Anson.
WILLIAM ALFRED MYATT, JR.,	Raleigh,	Wake.
LESLIE MONTEIRO NORMAN,	Richmond,	Henrico, Va.
WILLIAM FRANKLIN PATE,	Snow Hill,	Greene.
JOHN E. RAMSEY,	Salisbury,	Rowan.
ISAAC NEWTON SANDERS,	Swansboro,	Onslow.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
EDWARD OSCAR SMITH,	Crystal Hill,	Halifax, Va.
WALTER STEPHEN STURGILL,	Sturgill,	Ashe.
BEVERLY NATHANIEL SULLIVAN,	Bethania,	Forsyth.
RICHARD EPAPHRODITUS TIMBERLAKE,	Youngsville,	Franklin.
CHARLES AUGUSTUS WATSON,	Raleigh,	Wake.
BENJAMIN VADEN WRIGHT,	Cohaie,	Sampson.

**Irregulars.**

BEDFORD JETHRO BROWN,	Charlotte,	Mecklenburg.
WILBUR CARTER COOKE,	Louisburg,	Franklin.
BERTIE MASON GRAVES,	Winton,	Hertford.
ALFRED GALLOWAY HANKINS,	Wilmington,	New Hanover.
CHARLES ARTHUR NICHOLS,	Barnard,	Madison.
JOHN SMALLWOOD WHITLEY,	Williamston,	Martin.

**SOPHOMORE CLASS.**

CHARLES NICK ALLEN,	Auburn,	Wake.
WILLIAM DAVID BOSEMAN,	Rocky Mount,	Nash.
WILLIAM McDOWELL BURGIN, JR.,	Marion,	McDowell.
OLIVER CARTER,	Garland,	Sampson.
BENJAMIN BOWDEN CARR, JR.,	Mt. Olive,	Duplin.
JUNIUS SIDNEY CATES,	Sweptsonville,	Alamance.
ALEXANDER LILLINGTON CLARK,	Weldon,	Halifax.
ROBERT BAXTER COCHRAN,	Statesville,	Iredell.
ROY GRAHAM CRAVER,	Reeds,	Davidson.
HENRY GRADY DORSETTE,	St. Lawrence,	Chatham.
ALLIE DRAKE,	Hendersonville,	Henderson.
HERBERT WILSON DYSART,	Marion,	McDowell.
JAMES LUMSDEN FERREBEE,	Belcross,	Camden.
JOSEPH EDGAR FULP,	Fulp,	Stokes.
WALTER LINDSAY FULP,	Fulp,	Stokes.
JOSEPH NELSON GARREN,	Limestone,	Buncombe.
KOHLER GREENFIELD,	Kernersville,	Forsyth.
THOMAS WHITMEL GRIFFIN,	Lewiston,	Bertie.
ROBERT IRVING HOWARD,	Conetoe,	Edgecombe.
WILLIAM FRANKLIN INGRAM,	Mt. Gilead,	Montgomery.
ALBERT RANSOM JOHNSON,	Yale,	Henderson.
WILEY NATHANIEL KREEGER,	King,	Stokes.
GEORGE MEYERS McDONALD,	Rockingham,	Richmond.
CHARLIE OWEN McNAIR,	Wilmington,	New Hanover.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
JAMES PURDIE McNEILL,	Conway,	Horry, S. C.
ISAIAH MCPHAIL,	Clinton,	Sampson.
MILES WASHINGTON MASKE,	Polkton,	Anson.
HUGH ALEXANDER MORSON,	Raleigh,	Wake.
LAURIE MOSELEY,	Kinston,	Lenoir.
VASSAR YOUNG MOSS,	Zacho,	Granville.
JOHN ADOLPH NUNN,	New Bern,	Craven.
JAMES LAFAYETTE PARKER,	Cypress Creek,	Bladen.
GEORGE DAVIS PARSLEY, JR.,	Wilmington,	New Hanover.
JOHN ELLIS PEARSON,	Saluda,	Polk.
THEODORE OBER POMEROY,	Graham,	Alamance.
WILLIAM BENEDICT REINHARDT,	Reinhardt,	Lincoln.
THOMAS STRADLEY ROGERS,	Lyons,	Granville.
ROBERT PHILIPS SADLER,	Dixie,	Mecklenburg.
WILLIAM SIDNEY SMETHURST,	Raleigh,	Wake.
MARVIN GREEN SMITH,	Raleigh,	Wake.
WILLIAM ERNEST SNOW,	High Point,	Guilford.
RUSSELL ELSTNER SNOWDEN,	Elizabeth City,	Pasquotank.
LEROY CLARK STEELE,	Turnersburg,	Iredell.
ARTHUR KENDALL THOMAS,	Thomasville,	Davidson.
PINKNEY LAWSON TROTTER,	Charlotte,	Mecklenburg.
JOSEPH PLATT TURNER,	Norwood,	Stanly.
CLEVELAND DOUGLASS WELCH,	Waynesville,	Haywood.

### Irregulars.

GEORGE FRANCIS MARION DAIL,	Snow Hill,	Greene.
FREDERICK GASKILL PARKER,	New London,	Stanly.
JOHN HOUSTON SHUFORD,	Sandifer,	Mecklenburg.
SIDNEY HAYWOOD SMITH,	Lexington,	Davidson.
WILLIAM STAMEY STACY,	Morganton,	Burke.
ALVIN BUFORD WATSON,	Concord,	Cabarrus.

### FRESHMAN CLASS.

JOHN RICHARD ANDERSON,	Mocksville,	Davie.
WARREN OCTAVOUS ARMSTRONG,	Cooch's Bridge,	New Castle, Del.
SYDNEY WOODWARD ASBURY,	Burkmont,	Burke.
WILLIAM MEBANE ATWATER,	Rialto,	Chatham.
EUGENE CLEVELAND BAGWELL,	Raleigh,	Wake.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
WILLIAM LEWIS BARLOWE, JR.,	Tarboro,	Edgecombe.
CLARENCE THEOPHILUS BERNHARDT,	Salisbury,	Rowan.
PAUL G. BETTS,	Albemarle,	Stanly.
WILLIE MORTON BOGART,	Washington,	Beaufort.
LESLIE NORWOOD BONEY,	Wallace,	Duplin.
LUKE W. BONEY,	Rose Hill,	Duplin.
TOBIAS JUDSON BRIGHT,	Murphy,	Cherokee.
DAVID TULLY BRINKLEY,	Elk Park,	Mitchell.
SHERWOOD BATTLE BROCKWELL,	Raleigh,	Wake.
JAMES THOMAS BROUGHTON,	Raleigh,	Wake.
GEORGE ENNIE BROWN,	Asheville,	Buncombe.
SIDNEY GLENN BROWN,	Greensboro,	Guilford.
DANIEL STANHOPE CALDWELL,	Concord,	Cabarrus.
JOHN SAMUEL PINKNEY CARPENTER,	Lincolnton,	Lincoln.
FRANK LEWIS CARTY,	Washington,	Beaufort.
WILLIAM WIGGIN CASERLEY,	Warrenton,	Warren.
BRUCE HERBERT CATES,	Varina,	Wake.
RAY CLEMENT,	Mocksville,	Davie.
JOHN ELIOT COIT	Salisbury,	Rowan.
NIELSON PHARR COPPEDGE,	Rockingham,	Richmond.
SUMMEY CROUSE CORNWELL,	Dallas,	Gaston.
WALTER GLUYAS CRAVEN,	Bristow,	Mecklenburg.
CHARLES LESTER CREECH,	Greensboro,	Guilford.
JOHN HALSEY CROSS,	Burdette,	Mecklenburg.
EUGENE ENGLISH CULBRETH,	Statesville,	Iredell.
ERNEST LEONIDAS DENTON,	Ormondsville,	Greene.
KARL REED DETTER,	Lincolnton,	Lincoln.
JOHN BRYAN DICKSON,	Rae ford,	Robeson.
JUNIUS FRANKLIN DIGGS,	Diggs,	Richmond.
GEORGE WASHINGTON DUNN,	Scotland Neck,	Halifax.
WILLIAM EDWARD DUNN,	Scotland Neck,	Halifax.
PAUL H. ELKINS,	Winston-Salem,	Forsyth.
DELMA DAKOTA ELLINGTON,	Raleigh,	Wake.
THEOPHILUS THOMAS ELLIS,	Pearpond,	Vance.
WELDON THOMPSON ELLIS,	Stubbs,	Cleveland.
EDWARD EVERETT ETHEREDGE, JR.,	Windsor,	Bertie.
PAUL FLETCHER FAISON,	Raleigh,	Wake.
WILLIAM PATRICK FARTHING,	Durham,	Durham.
JOHN DAVID FERGUSON,	Bladenboro,	Bladen.
WILLIAM GLENN FIELDS,	Sparta,	Alleghany.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
NICHOLAS SHIPLEY FITZPATRICK,	Crowell's,	Halifax.
ROBERT B. FLAKE,	Wadesboro,	Anson.
HUGH PIERCE FOSTER,	Nance,	Rockingham.
OLIVER MAX GARDNER,	Shelby,	Cleveland.
LAMAR GIDNEY,	Shelby,	Cleveland.
PAUL JONES GILLAM,	Windsor,	Bertie.
WILEY BRAXTON GILLAM,	Harrellsville,	Hertford.
JOHN HOWARD GLENN,	Crowder's Creek,	Gaston.
ERNEST HARRIS GOODWIN,	Raleigh,	Wake.
AMOS LAWSON GRANGER,	Rosedale,	Pasquotank.
HARMON EDWARD GRIMSLEY,	Snow Hill,	Greene.
EMIL GUNTER,	Pierson,	Volusia, Fla.
HERMAN GUNTER,	Pierson,	Volusia, Fla.
PERCIVAL HALL,	Winston-Salem,	Forsyth.
WILLIAM WELDON HARDGROVE,	Raleigh,	Wake.
JAMES IDIE HARDIE,	Raleigh,	Wake.
WILLIAM SHAKESPEARE HARRIS,	Mebane,	Alamance.
ROBERT ERNEST HEATH,	Monroe,	Union.
WILLIAM ARCHIBALD HEDRICK,	Salisbury,	Rowan.
JOSEPH BENJAMIN HIGGS,	Greenville,	Pitt.
ERNEST DEVAUGHN HIGHSMITH,	Harrell's Store,	Sampson.
JAMES WHEDEY HOLLEY,	Colerain,	Bertie.
HADEN HOLMES,	Salisbury,	Rowan.
JOHN DAVID IRBY,	Blackstone,	Nottoway, Va.
RICHARD IRBY,	Blackstone,	Nottoway, Va.
WILLIAM GRAHAM JAMES,	Wilmington,	New Hanover.
EUGENE COLISTUS JOHNSON,	Ingold,	Sampson.
JAMES NEVERSON JOYNER,	Union,	Hertford.
JAMES MATTHEW KENNEDY,	McClammy,	Wayne.
WILL CALVIN KIRBY,	Charlotte,	Mecklenburg.
EDWARD LEE KNIGHT,	Mildred,	Edgecombe.
JAMES ALEXANDER KNOX,	Caldwell,	Mecklenburg.
BENNETT LAND, JR.,	Elizabeth City,	Pasquotank.
JOHN THOMAS LAND,	Poplar Branch,	Currituck.
LOUIS CHARLES LATHAM,	Greenville,	Pitt.
EDGAR PELOPIDAS LEACH,	Raleigh,	Wake.
WALTER MOORE LEWIS,	Morehead City,	Carteret.
GEORGE FELIX LOFTIN,	Kinston,	Lenoir.
GEORGE CORPENING LOVE,	Montezuma,	Mitchell.
KENNETH LYON,	Lyons,	Granville.



<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
EDWIN LYTCH,	Lytch,	Richmond.
WILLIAM FREDERICK McCANLESS,	Salisbury,	Rowan.
WILLIAM OGDEN MEEKS,	Clinton,	Sampson.
RICHARD MARVIN MINOR,	Oxford,	Granville.
JESSE JOHN MORRIS,	Weeksville,	Pasquotank.
PAUL EUGENE MORROW,	Burlington,	Alamance.
RAFAEL SANCHEZ MOTT,	Wilkesboro,	Wilkes.
SPRUNT NEWTON,	Xenia,	Duplin.
JOHN OSBORNE,	Cleveland Mills,	Cleveland.
DAVID STARR OWEN,	Fayetteville,	Cumberland.
LEWIS WILSON PAGE,	Hoffman,	Richmond.
BARNIE LEE PARKER.	Hunting Creek,	Wilkes.
CLAUD LaFAYETTE PARKER,	Raleigh,	Wake.
JESSE EDCAR PARKER,	Selma,	Johnston.
JOHN HARVEY PARKER,	Hillsboro,	Orange.
DUNCAN ADOLPHUS PATE,	Gibson,	Scotland.
HENRY BRADLEY PEARCE, JR.,	Selma,	Johnston.
JAMES HICK PIERCE,	Warsaw,	Duplin.
ROBERT FRANK PERKINS,	Morganton,	Burke.
EDGAR PERSONS,	Waynesville,	Haywood.
LEON JOSEPH PINNER,	Southport,	Brunswick.
JOEL POWERS,	Method,	Wake.
GEORGE PARK PRIDGEN,	Warsaw,	Duplin.
ISAAC LOFTIN PRIDGEN,	Glenfield,	Greene.
ROBERT OWEN PRIMROSE,	Raleigh,	Wake.
EDWARD SUTTON PURVIANCE,	Charlotte,	Mecklenburg.
FREDERICK LAWTON RICH,	Seven Springs,	Wayne.
EDWARD HAYS RICKS,	Enfield,	Halifax.
WILSON WHITAKER RICKS,	Enfield,	Halifax.
WILLIE STATON RIVES,	Hamilton,	Martin.
JOHN ASHBY ROBERTSON,	Burlington,	Alamance.
EUGENE THOMAS ROBESON,	Raleigh,	Wake.
GASTON WILDER ROGERS,	Raleigh,	Wake.
HENRY JAMES ROGERS, JR.,	Diggs,	Richmond.
JAMIE PICKETT ROSE,	Statesville,	Iredell.
AUBREY CHARLES SHARPE,	Harrellsville,	Hertford.
BEMBREY LYNWARD SHARPE,	Harrellsville,	Hertford.
HOWARD SIMPSON,	Simpson's Store,	Rockingham.
CARSON SINCLAIR,	Marion,	McDowell.
ALLEN HOLMES SLOAN,	Morganton,	Burke.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
CHARLES WILLIAM SMALL, JR.,	Hertford,	Perquimans.
WILLIAM HOPTON SMITH, JR.,	Goldsboro,	Wayne.
WILLIAM LINCOLN SMITH, JR.,	Wilmington,	New Hanover.
JOHN HILL SPIVEY,	Lewiston,	Bertie.
ERWIN STACK,	Monroe,	Union.
EDWARD ROE STAMPS,	Raleigh,	Wake.
CLARENCE RABON STIMPSON,	Turnersburg,	Iredell.
JONATHAN TAYLOE STOKES,	Windsor,	Bertie.
CLARENCE GEORGE SUGG,	Snow Hill	Greene.
CLAUD D. TAYLOR,	West Raleigh,	Wake.
JAMES VESTAL THOMAS,	New Bern,	Craven.
JOHN SANFORD THOMPSON,	Raleigh,	Wake.
STEPHEN HULL THREADGILL, JR.,	Wadesboro,	Anson.
HERBERT A. TOMLINSON,	Raleigh,	Wake.
CHARLES EDWARD TROTTER,	Franklin,	Macon.
COLLIN PIERCE TYSON,	Norwood,	Stanly.
WRIGHT ELBERT UPCHURCH,	Raleigh,	Wake.
EDWARD WARREN VICK,	Selma,	Johnston.
KENNETH CLYDE WAGSTAFF,	Winstead,	Person.
ALFONSO LEWIS WALKER,	Raleigh,	Wake.
TRYON PERRY WEATHERS,	Millbrook,	Wake.
GEORGE THOMAS WHITAKER,	Letha,	Franklin.
JONATHAN WINBORNE WHITE,	Greenville,	Pitt.
GEORGE BAILEY WHITEHURST,	New Bern,	Craven.
JAMES EDWARD WHITFIELD,	Franklinton,	Franklin.
J. F. WHITFIELD,	Hamlet,	Richmond.
EDWIN SEYMOUR WHITING,	Hamlet,	Richmond.
JAMES LAWSON WIDBY,	Lenoir,	Caldwell.
HOWARD ALLEN WILLEY,	Elizabeth City,	Pasquotank.
JAMES MONROE WILLIAMS,	Raleigh,	Wake.
HENRY E. WYATT,	Raleigh,	Wake.

## Irregulars.

NUMA REID COOK,	Pomona,	Guilford.
CHARLIE W. ISENHOUR,	Salisbury,	Rowan.
GALIEN DOYT MCINTOSH,	Hickory,	Catawba.
JAMES JACKSON NICHOLS,	Asheville,	Buncombe.
FRANK LEE SADLER,	Sandifer,	Mecklenburg.



## SPECIAL STUDENTS.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
SHOLER ENGLISH ABSHER,	North Wilkesboro,	Wilkes.
LUCIUS ALFRED,	Wake Forest,	Wake.
GEORGE LEANDER BEALL,	Greensboro,	Guilford.
JOHN LYON BULLOCK,	Hester,	Granville.
EVERETT GOODRICH COUCH,	Southern Pines,	Moore.
WILLIAM EATON FENNER,	Halifax,	Halifax.
WILLIAM WRIGHT HAYWOOD,	Tarboro.	Edgecombe.
ARTHUR EUGENE HOLTON, JR.,	Winston-Salem,	Forsyth.
CHARLES M. NULL,	Kokomo,	Howard, Ind.
GEORGE PASCHAL,	Washington,	Dist. Colum.
HENRY PERSON,	Kittrell,	Vance.
BENJAMIN EDGAR ROGERS,	Clayton,	Johnston.
GEORGE SHELLUM, JR.,	Raleigh,	Wake.
WILLIAM N. H. SMITH,	Raleigh,	Wake.

# TENTH ANNUAL COMMENCEMENT,

June 7, 1899.

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## DEGREES CONFERRED:

### BACHELOR OF SCIENCE.

#### In Agriculture.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
JOHN HENDERSON BIRDSONG, Thesis: Determination of Carbon Dioxide in Some Class-rooms.	Raleigh,	Wake.
EUGENE GRAY PERSON, Thesis: The Effects of Dehorning on the Quantity and Quality of the Milk-flow.	Louisburg,	Franklin.

#### In Engineering.

WM. DAVIDSON ALEXANDER, JR., Thesis: Construction of an Adjustable Socket for a Photometer.	Croft,	Mecklenburg.
IRA WILSON BARBER, Thesis: Construction of a Contact-maker for Determining the Curves of Alternating Currents.	Culler,	Stokes.
FRANCIS MARION FOY, JR., Thesis: Construction of a High-tension Storage Battery.	Scott's Hill,	Pender.
ALBERT SIDNEY LYON, Thesis: Construction of an Earth Inductor.	Wilton,	Granville.
CARROLL LAMB MANN, Thesis: Establishment of a Meridian Line at the N. C. College of Agriculture and Mechanic Arts.	Engelhard,	Hyde.
O'KELLY WILLIAMS MYERS, Thesis: Design of a Sewer for West Raleigh (with Sloan).	Washington,	Beaufort.
FREDERICK ERASTUS SLOAN, Thesis: Design of a Sewer for West Raleigh (with Myers).	Statesville,	Iredell.
ANDREW THOMAS SMITH, Thesis: Plans for the Improvement of the Raleigh Water Supply by Diverting the Drainage of the town of Cary from Walnut Creek.	Oxford,	Granville.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
ALEXIS PRESTON STEELE,	Statesville,	Iredell.
Thesis: Design of a Double-friction Winding Drum.		

### In Science.

CHRISTOPHER MILLER HUGHES,	Raleigh,	Wake.
Thesis: Nature and Extent of Food Adulteration in the United States.		
EUGENE LEROY PARKER,	Raleigh,	Wake.
Thesis: The Chemistry of the Cigarette.		
WILLIAM ANDERSON SYME,	Raleigh,	Wake.
Thesis: Modern Biology (with Williams).		
HUGH WARE,	King's Mountain,	Cleveland.
Thesis: A Study of Cans for Canned Goods.		
CLAUD BURGESS WILLIAMS,	Elizabeth City,	Pasquotank.
Thesis: Modern Biology (with Syme).		

### MECHANICAL ENGINEER.

WM. ALEX. GRAHAM CLARK,	Raleigh,	Wake.
Thesis: Design of a Plain Slide-valve Steam-engine.		
JORDAN LEA WATSON,	Raleigh,	Wake.
Thesis: Test of a Twenty-five Horse-power Automatic Steam-engine.		

### HONORS IN SCHOLARSHIP.

FLETCHER HESS BARNHARDT,	Stanly County.
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### HONORS FOR PUNCTUALITY.

FRANCIS MARION FOY, JR.,	Pender County.
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### PRIZES FOR WORK IN AGRICULTURE.

#### First Prize.

WILLIAM STAMEY STACY,	Burke County.
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#### Second Prize.

ALBERT RANSOM JOHNSON,	Henderson County.
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## REGISTER OF ALUMNI.

### CLASS OF 1893.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROBERT WILSON ALLEN, Prof. Mathematics, Preston Normal School.	B. E.,	Preston, Md.
SAMUEL ERSON ASBURY, Assistant Chemist State Agricultural Department.	B. S.,	Raleigh, N. C.
HENRY EMIL BONITZ Architect and Superintendent.	B. E.,	Wilmington, N. C.
FRANK FULLER FLOYD, Superintendent Linotype Machines for the <i>Knoxville Sentinel</i> .	B. E.,	Knoxville, Tenn.
CHARLES DUFFY FRANCKS, Farmer and Merchant.	B. E.,	Richlands, N. C.
EDWARD MOORE GIBBON, Machinist U. S. Government Dock-yard.	B. E.,	Port Royal, S. C.
GEORGE PENDER GRAY, Farm Manager.	B. S.,	Silver Lake, Fla.
CHARLES BOLLING HOLLADAY, With John L. Williams & Sons.	B. E.,	Richmond, Va.
WILLIAM MCNEILL LYTCH, Locomotive Engineer.	B. E.,	Phoenix, Fla.
WALTER JEROME MATHEWS, Engineer for the Eastern N. C. Asylum for the Insane.	B. E.,	Goldsboro, N. C.
JAMES WILLIAM MCKOY, Civil Engineer and County Surveyor.	B. E.,	Black Mountain, N. C.
FRANK THEOPHILUS MEACHAM, Farm Superintendent State School for Deaf and Dumb.	B. S.,	Morganton, N. C.
CARL DEWITT SELLARS, Engineer for Altamaha Cotton Mills.	B. E.,	Altamaha, N. C.
CHARLES EDGAR SEYMOUR, Farmer and Superintendent of Public Roads.	B. S.,	Louisburg, N. C.
BUXTON WILLIAMS THORNE, Corporation Clerk.	B. E.,	Water Valley, Miss.
WILLIAM HARRISON TURNER, With Wachovia Mills (F. & H. Fries).	B. E.,	Salem, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES BURGESS WILLIAMS, Assistant Chemist State Agricultural Department.	B. S.,	Raleigh, N. C.
LOUIS THOMAS YARBROUGH, With Southern Bell Telephone Co.	B. E.,	Raleigh, N. C.
SAMUEL MARVIN YOUNG, Of S. M. & W. J. Young.	B. E.,	Raleigh, N. C.

## CLASS OF 1894.

CHARLES EDWARD CORPENING, Farmer.	B. E.,	Lenoir, N. C.
DAVID COX, JR., Architect and County Surveyor.	B. E.,	Hertford, N. C.
ROBERT DONNELL PATTERSON, JR., With American Tobacco Co.	B. S.,	Durham, N. C.
CHARLES PEARSON, Of Pearson & Ashe, Architects.	B. E.,	Raleigh, N. C.
ZEBBIE GEORGE ROGERS, Secretary and Treasurer.	B. E.,	Danville, Va.
JOHN HYER SANDERS, Locomotive Engineer for Lumber Co.	B. E.,	Chocowinity, N. C.
BENJAMIN FRANKLIN WALTON, Farmer.	B. S.,	Neuse, N. C.
JOHN MCCAMY WILSON, With Salem Iron Works.	B. E.,	Salem, N. C.

FRANK THEOPHILUS MEACHAM, See Class of 1893.	M. S.,	Morganton, N. C.
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## CLASS OF 1895.

THOMAS MARTIN ASHE, Of Pearson & Ashe, Architects.	B. E.,	Raleigh, N. C.
JAMES ADRIAN BIZZELL, Instructor in Chemistry N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
JOHN ISHAM BLOUNT, Mechanical Engineer, with Alabama Steel and Ship-building Co.	M. E.,	Ensley, Ala.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JAMES WASHINGTON BRAWLEY,	B. S.,	Mooresville, N. C.
Traveling Salesman.		
WALTER AUSTIN BULLOCK,	B. S.,	Attapulgus, Ga.
Superintendent Tobacco Farm.		
DAVID CLARK (M. E. Cornell Univ.),	B. E.,	Charlotte, N. C.
General Manager and Treasurer Ada Cotton Mills.		
GEO. WASHINGTON CORBETT, JR.,	B. E.,	Durham, N. C.
Engineer Cotton Mill.		
EDWIN SPEIGHT DARDEN,	B. S.,	Wilson, N. C.
With Banner Tobacco Warehouse.		
WILLIAM KEARNEY DAVIS, JR.,	B. E.,	Salem, N. C.
Superintendent Southside Manufacturing Co.		
JOSEPH CHARLES DEY,	B. S.,	Norfolk, Va.
Of J. C. Dey & Co., Wholesale Grocers.		
LEE BORDEN ENNETT,	B. S.,	Cedar Point, N. C.
Farmer.		
ISAAC HENRY FOUST,	B. E.,	Charlotte, N. C.
Farmer.		
CHARLES WYLLIS GOLD,	B. S.,	Wilson, N. C.
Business Manager <i>Wilson Times</i> . Editor <i>Dixie Dairyman</i> and <i>Dixie Farmer</i> .		
WILLIAM HENRY HARRIS,	B. E.,	Atlanta, Ga.
Assistant Southern Representative The Draper Co.		
CHRISTOPHER MILLER HUGHES,	B. E.,	Raleigh, N. C.
With Commercial and Farmers Bank.		
MALCOLM BEALL HUNTER,	B. E.,	Charlotte, N. C.
Textile Instructor Lee's Business College.		
SAMUEL CHRISTOPHER McKEOWN,	B. E.,	Cornwell, S. C.
Superintendent Machine Shops.		
MANN CABE PATTERSON,	B. E.,	Richmond, Va.
With Richmond Locomotive and Machine Works.		
ABRAM HINMAN PRINCE,	B. S.,	Red Springs, N. C.
Superintendent of Experiment Farm.		
VICTOR VASHTI PRIVOTT,	B. E.,	Edenton, N. C.
With Lumber Company.		
HOWARD WISWALL, JR.,	B. E.,	Norfolk, Va.
Inspector United States Engineers.		
CHARLES GARRETT YARBROUGH,	B. E.,	Pittsburg, Pa.
With Westinghouse Electric Company.		

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES MARCELLUS PRITCHETT,	M. E.,	Raleigh, N. C.
Instructor in Mechanical Engineering N. C. College of Agriculture and Mechanic Arts.		

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### CLASS OF 1896.

DANIEL ALLEN,	B. S.,	Raleigh, N. C.
With S. C. Pool's Shoe Store.		
GEORGE STRONACH FRAPS,	B. S.,	Raleigh, N. C.
Ph. D. Johns Hopkins University; Instructor in Chemistry N. C. College of Agriculture and Mechanic Arts.		
MARION JACKSON GREEN,	B. S.,	Victor, N. C.
Assistant in Union Home School.		
JOHN HOWARD,	B. S.,	Tarboro, N. C.
Civil Engineer.		
WILLIAM COLBERT JACKSON,	B. S.,	Ayden, N. C.
With J. R. Smith & Bro.		
ROBERT GRAHAM MEWBORNE,	B. S.,	Richmond, Va.
Assistant Chemist Virginia-Carolina Chemical Co.		
LEVI ROMULUS WHITTED,	B. S.,	Norfolk, Va.
Draughtsman in Navy-yard.		
HENRY LLOYD WILLIAMS,	B. S.,	Merchant Mills, N. C.
Merchant.		

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SAMUEL ERSON ASBURY,	M. S.,	Raleigh, N. C.
See Class of 1893.		
CHARLES BURGESS WILLIAMS,	M. S.,	Raleigh, N. C.
See Class of 1893.		
DAVID CLARK,	M. E.,	Charlotte, N. C.
See Class of 1895.		
WILLIAM HENRY HARRIS,	M. E.,	Atlanta, Ga.
See Class of 1895.		

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CHARLES MARCELLUS PRITCHETT,	C. E.,	Raleigh, N. C.
See Class of 1895.		

## CLASS OF 1897.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JOSEPH SAMUEL BUFFALOE,	B. S.,	Garner, N. C.
	Physician.	
JOHN WILLIAM CARROLL,	B. S.,	Raleigh, N. C.
		Dairyman N. C. College of Agriculture and Mechanic Arts.
CHARLES EDWARD CLARK,	B. S.,	Raleigh, N. C.
		Manager Farm Central N. C. Hospital.
WM. ALEXANDER GRAHAM CLARK,	B. S.,	Ithaca, N. Y.
		Student Cornell University.
NICHOLAS LOUIS GIBBON,	B. S.,	Charlotte, N. C.
		With Stuart Cramer Machine Co..
CEBURN DODD HARRIS,	B. S.,	Baltimore, Md.
		Student Chemistry, Johns Hopkins University.
JERE EUSTIS HIGHSMITH,	B. S.,	Parkersburg, N. C.
	Farmer.	
CLYDE BENNETT KENDALL,	B. S.,	Columbia, S. C.
		Civil Engineer S. A. L.
JOSEPH LAWRENCE KNIGHT,	B. S.,	Raleigh, N. C.
	Dairyman.	
WALTER JONES MCLENDON, JR.,	B. S.,	Lowell, Mass.
		Erecting Machinist Lowell Machine Shop.
REPTON HALL MERRITT,	B. S.,	McAdensville, N. C.
		Book-keeper Cotton Mill.
ALBERT HICKS OLIVER,	B. S.,	Brevard, N. C.
		Dairyman and Farm Superintendent.
HUGH WILLIAMS PRIMROSE,	B. S.,	Ensley, Ala.
		Assistant Chemist Alabama Steel and Ship-building Co.
WILLIAM HUNTER SANDERS,	B. S.,	Raleigh, N. C.
		Assistant Engineer Raleigh Electric Co.
THOMAS JEHU SMITHWICK,	B. S.,	Port Royal, S. C.
		Engineer Navy-yard.
LEA WATSON,	B. S.,	Charlotte, N. C.
		With D. A. Tompkins Co.
BRADLEY JEWETT WOOTEN,	B. S.,	Philippine Islands.
		Lieutenant U. S. Army.
JOHN ISHAM BLOUNT,	C. E.,	Ensley, Ala.
		See Class of 1895.
DAVID CLARK,	C. E.,	Charlotte, N. C.
		See Class of 1895.
LEVI ROMULUS WHITTED,	C. E.,	Norfolk, Va.
		See Class of 1896.



## CLASS OF 1898.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DORSEY FROST ASBURY,	B. S.,	Newport News, Va. Draughtsman Newport News Ship-yards.
✓ SIDNEY HAMILTON BECK,	B. S.,	Newport News, Va. Draughtsman Newport News Ship-yards.
✓ ANSON ELIKEM COHOON,	B. S.,	Ithaca, N. Y. Student in Forestry, Cornell University.
✓ HUGH McCULLOM CURRAN,	B. S.,	Ithaca, N. Y. Student in Forestry, Cornell University.
BENJAMIN CAREY FENNELL,	B. S.,	Raleigh, N. C. Post-graduate Student, N. C. College of Agriculture and Mechanic Arts.
✓ ALPHEUS ROUNTREE KENNEDY,	B. S.,	Newport News, Va. Draughtsman Newport News Ship-yards.
FREDERICK CREECY LAMB,	B. S.,	Raleigh, N. C. Assistant Chemist State Department of Agriculture.
EDWIN BENTLEY OWEN,	B. S.,	Raleigh, N. C. Librarian N. C. College of Agriculture and Mechanic Arts.
MOORE PARKER,	B. S.,	Lowell, Mass. Student Lowell Textile School.
NUMA REID STANSEL,	B. S.,	Raleigh, N. C. Instructor in Physics and Electrical Engineering N. C. College of Agriculture and Mechanic Arts.
TEISAKU SUGISHITA,	B. S.,	Tokyo, Japan. Engineer, Imperial Railway of Japan.
GEORGE FREDERICK SYME,	B. S.,	Nicaragua, C. A. Civil Engineer, with Isthmian Canal Commission.

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ROBT. DONNELL PATTERSON, JR., M. S., Durham, N. C.  
See Class of 1894.

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## CLASS OF 1899.

WM. DAVIDSON ALEXANDER, JR.,	B. S.,	Charlotte, N. C. Mecklenburg Iron Works.
✓ IRA WILSON BARBER,	B. S.,	Port Royal, S. C. Engineer, Naval Station.
JOHN HENDERSON BIRDSONG,	B. S.,	Raleigh, N. C. Post-graduate in Chemistry, N. C. College of Agriculture and Mechanic Arts

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
FRANCIS MARION FOY, Post-graduate Electrical Engineering and Instructor, N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
ALBERT SIDNEY LYON, Electrician Weldon Electric Lighting Co.	B. S.,	Weldon, N. C.
CARROLL LAMB MANN, Isthmian Canal Commission.	B. S.,	Nicaragua, C. A.
O'KELLY WILLIAMS MYERS, Civil Engineer, with S. A. L.	B. S.,	Camden, S. C.
EUGENE LEROY PARKER, Assistant Chemist Virginia-Carolina Chemical Co.	B. S.,	Richmond, Va.
EUGENE GRAY PERSON, With Odell Cotton Mill.	B. S.,	Concord, N. C.
FREDERICK ERASTUS SLOAN, Book-keeper Weldon Milling Co.	B. S.,	Weldon, N. C.
ANDREW THOMAS SMITH, Assistant in Shop N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
ALEXIS PRESTON STEELE, Of J. C. Steele & Son's Brick Machinery Co.	B. S.,	Statesville, N. C.
WILLIAM ANDERSON SYME, Instructor in Chemistry N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
HUGH WARE, Farmer.	B. S.,	King's Mountain, N. C.
CLAUD BURGESS WILLIAMS, Student Richmond College of Medicine.	B. S.,	Richmond, Va.

THE  
NORTH CAROLINA COLLEGE  
OF  
AGRICULTURE AND MECHANIC ARTS,  
RALEIGH.

1900—1901.

PRESSES OF E. M. UZZELL,  
RALEIGH, N. C.

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## COLLEGE CALENDAR.

1901.

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Saturday,	July	11,	{ Entrance examination at each county court-house, 10 A. M.
Tuesday,	September	3,	{ Entrance examination at the College, 9 A. M.
Wednesday,	September	4,	First Term begins; Registration Day.
Thursday,	November	28,	Thanksgiving Day.
Friday,	December	20,	First Term ends.

1902.

Thursday,	January	2,	Second Term begins; Registration Day.
Friday,	March	14,	Second Term ends.
Monday,	March	17,	Third Term begins; Registration Day.
Friday,	May	23,	Examinations end.
Sunday,	May	25,	Baccalaureate Sermon.
Monday,	May	26,	Alumni Day.
Tuesday,	May	27,	Annual Oration.
Wednesday,	May	28,	Commencement Day.

# BOARD OF TRUSTEES.

W. S. PRIMROSE, *President*, Raleigh.

R. L. SMITH, *Secretary*, Albemarle.

W. S. PRIMROSE, Raleigh	State-at-Large	1901
A. LEAZAR, Mooresville	State-at-Large	1901
H. E. FRIES, Salem	State-at-Large	1901
D. A. TOMPKINS, Charlotte	Sixth District	1901
T. B. TWITTY, Rutherfordton	State-at-Large	1901
FRANK WOOD, Edenton	First District	1901
J. C. L. HARRIS, Raleigh	State-at-Large	1903
L. C. EDWARDS, Oxford	State-at-Large	1903
JOHN W. HARDEN, JR., Raleigh	State-at-Large	1901
H. E. BONITZ, Wilmington	State-at-Large	1901
MATT. MOORE, Kenansville	Third District	1901
J. Z. WALLER, Burlington	Fifth District	1901
W. H. RAGAN, High Point	State-at-Large	1901
DAVID CLARK, Charlotte	State-at-Large	1901
R. L. SMITH, Albemarle	State-at-Large	1901
P. J. SINCLAIR, Marion	State-at-Large	1901
J. B. STOKES, Windsor	Second District	1901
W. J. PEELE, Raleigh	Fourth District	1901
E. Y. WEBB, Shelby	Seventh District	1901
W. C. FIELDS, Sparta	Eighth District	1901
J. FRANK RAY, Franklin	Ninth District	1901
GEO. T. WINSTON, President of the College	<i>Ex officio.</i>	

## EXECUTIVE COMMITTEE.

W. S. PRIMROSE, *Chairman*; A. LEAZAR, and H. E. FRIES.

## COLLEGE FINANCE COMMITTEE.

W. H. RAGAN, *Chairman*; J. F. RAY, and DAVID CLARK.

## STATION FINANCE COMMITTEE.

W. C. FIELDS, *Chairman*; J. B. STOKES, and E. Y. WEBB.



## FACULTY.

---

GEORGE TAYLOE WINSTON, A. M., LL.D., President and Professor of Political Economy.

WILBUR FISK MASSEY, C. E., Professor of Horticulture, Arboriculture and Botany.

WILLIAM ALPHONSO WITHERS, A. M., Professor of Pure and Agricultural Chemistry.

DANIEL HARVEY HILL, A. M., Professor of English.

WALLACE CARL RIDDICK, A. B., C. E., Professor of Civil Engineering and Mathematics.

BENJAMIN IRBY, M. S., Professor of Agriculture.

FREDERICK AUGUSTUS WEIHE, M. E., Ph. D., Professor of Physics and Electrical Engineering.

CHARLES WALTER SCRIBNER, A. B., M. E., Professor of Mechanical Engineering.

FREDERICK ELISHA PHELPS, Captain U. S. Army (retired), Professor of Military Science and Tactics.

ROBERT E. LEE YATES, A. M., Assistant Professor of Mathematics.

GEORGE STRONACH FRAPS, B. S., Ph. D., Assistant Professor of Chemistry.

CHARLES BENJAMIN PARK, Superintendent of Shops.

JAMES ADRIAN BIZZELL, M. S., Instructor in Chemistry.

THOMAS LOFTIN WRIGHT, B. S., Instructor in English.

CHARLES WALTER HYAMS, Instructor in Botany and Entomology.

JAMES MARTIN JOHNSON, M. S., Instructor in Animal Industry.

ALEXANDER RHODES, Instructor in Horticulture.

NUMA REID STANSEL, B. S., Instructor in Electrical Engineering.

HENRY MERRYMAN WILSON, A. B., Instructor in Cotton Manufacturing.

WILLIAM ANDERSON SYME, B. S., Instructor in Chemistry.

LOUIS BENJAMIN ABBOTT, C. E., Instructor in Civil Engineering.

THOMAS ALFRED CHITTENDEN, B. S., Instructor in Mechanical Drawing.

WALTER E. WEIHE, D. V. M., Instructor in Veterinary Medicine.

VIRGIL WILLIAM BRAGG, Instructor in Wood-working.

CARROLL LAMB MANN, B. S., Assistant in Civil Engineering.

FRANCIS MARION FOY, JR., B. S., Assistant in Mathematics.

ARCHIBALD BLAIR HUBARD, B. S., Assistant in Mechanical Engineering.

MARTIN EARLEY CARTER, Assistant in Wood-working.

### OTHER OFFICERS.

EDWIN BENTLEY OWEN, B. S., Librarian.

JOHN MEADE FIX, Bursar.

ARTHUR FINN BOWEN, Registrar and Secretary.

ELIZABETH VAN DER VEER DARBY, Stenographer.

BENJAMIN SMITH SKINNER, Farm Superintendent.

SUSAN COLWELL CARROLL, Matron.

JAMES RUFUS ROGERS, A. B., M. D., Physician.

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### AGRICULTURAL EXPERIMENT STATION DEPARTMENT.

GEORGE TAYLOE WINSTON, A. M., LL. D., President and Director.

WILLIAM ALPHONSO WITHERS, A. M., Chemist.

BENJAMIN IRBY, M. S., Agriculturist.

WILBUR FISK MASSEY, C. E., Horticulturist.

GEORGE STRONACH FRAPS, Ph. D., Assistant Chemist.

JAMES ADRIAN BIZZELL, M. S., Assistant Chemist.

ALEXANDER RHODES, Assistant Horticulturist.

CHARLES WALTER HYAMS, Assistant Botanist and Entomologist.

JAMES MARTIN JOHNSON, M. S., Assistant in Animal Industry.

JOHN MEADE FIX, Bursar.

ARTHUR FINN BOWEN, Secretary.

ELIZABETH VAN DER VEER DARBY, Stenographer.

## MILITARY ORGANIZATION.

CAPTAIN FREDERICK E. PHELPS, U. S. Army (retired),  
Commandant.

### Staff.

FRED. WILHELM BONITZ, Major.

FELIX GRAY CRUTCHFIELD, First Lieutenant and Adjutant.

ZOLLY MOSBY BOWDEN, First Lieutenant and Quartermaster.

### Non-commissioned Staff.

JAMES LUMSDEN FEREBEE, Acting Sergeant-major.

BEDFORD JETHRO BROWN, Quartermaster Sergeant.

BEVERLY NATHANIEL SULLIVAN, Color Sergeant.

### Band.

FLETCHER HESS BARNHARDT, Captain.

WILLIAM DUNN BRIGGS, Captain and Drum-major.

BENJAMIN OLIVER HOOD, First Lieutenant.

PAUL EUGENE MORROW, First Sergeant.

EDWARD OSCAR SMITH, Chief Trumpeter.

EUGENE THOMAS ROBESON, Chief Musician.

HAYWOOD LEWIS ALDERMAN, Assistant Chief Musician.

WILLIAM ALDERMAN PARKER, Sergeant.

### Company Officers.

**Co. A.**—W. D. FAUCETTE, Captain; W. F. PATE, First Lieutenant; C. R. NICHOLS, Second Lieutenant; R. E. SNOWDEN, First Sergeant; J. L. FEREBEE, Second Sergeant; W. D. BOSEMAN, Third Sergeant; R. I. HOWARD, Fourth Sergeant; J. H. SHUFORD, Fifth Sergeant; J. F. DIGGS, First Corporal; E. GUNTER, Second Corporal; W. A. HEDRICK, Third Corporal; S. W. ASBURY, Fourth Corporal.

**Co. D.**—W. S. STURGILL, Captain; B. V. WRIGHT, First Lieutenant; C. H. McQUEEN, Second Lieutenant; V. Y. MOSS, First Sergeant; E. E. CULBRETH, Second Sergeant; J. S. CATES, Third Sergeant; O. CARTER, Fourth Sergeant; L. GIDNEY, Fifth Sergeant; S. C. CORN-

WELL, First Corporal; E. LYCH, Second Corporal; J. W. WHITE, Third Corporal; W. N. BOGART, Fourth Corporal.

**Co. B.**—L. O. LOUGEE, Captain; J. J. LILES, First Lieutenant; W. O. BENNETT, Second Lieutenant; C. D. WELCH, First Sergeant; A. L. CLARKE, Second Sergeant; O. M. GARDNER, Third Sergeant; W. B. REINHARDT, Fourth Sergeant; K. C. WAGSTAFF, Fifth Sergeant; W. L. BARLOW, First Corporal; D. S. OWEN, Second Corporal; E. C. JOHNSON, Third Corporal; E. S. WHITING, Fourth Corporal.

**Co. C.**—G. M. DAVIS, Captain; W. L. CRAVEN, First Lieutenant; W. P. CRAIGE, Second Lieutenant; L. MOSELY, First Sergeant; R. B. COCHRANE, Second Sergeant; J. M. KENNEDY, Third Sergeant; L. N. BONEY, Fourth Sergeant; C. L. CREECH, Fifth Sergeant; J. D. FERGURSON, First Corporal; J. E. WIDBY, Second Corporal; H. P. FOSTER, Third Corporal; J. H. GLENN, Fourth Corporal.

## GENERAL INFORMATION.

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The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and the late R. S. Pullen, of Raleigh. The Congress of the United States in 1862 passed a law donating to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to \$7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was donated by the late R. S. Pullen. The College was formally opened for students October 1, 1889, with one building and five teachers.

Additional funds were provided afterwards by the National Congress for the support of the College and the State Agricultural Experiment Station, which is now a department of the College.

An annual appropriation of \$10,000 is made by the Legislature of North Carolina. With the exception of special appropriations, made from time to time by the Legislature, this is the only money received directly from the State.

The College is beautifully located in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects. There is an abundant supply of water from deep wells, and the natural slope of the land furnishes perfect drainage.

The College now owns six hundred acres of land and thirteen buildings, and its teaching force consists of twenty-eight persons. Its library contains three thousand volumes, and its reading-room is well supplied with popular, literary and technical journals. Both library and reading-room are accessible to students eight hours a day. There are also special reference libraries in connection with the various laboratories, drawing-rooms, and work-shops.

## THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly, ratified March 12, 1877. Its work was greatly promoted by Act of Congress of March 2d, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same.

The Experiment Station offices and laboratories are located in the Main Building of the College. The horticultural experiment farm contains twenty-three acres, and is well equipped with barns and other necessary houses. For agricultural experiments, sufficient land is reserved on the College farm, about twenty-five acres being appropriated to this purpose annually. Publications for the benefit of truckers, nurserymen, stock-raisers and other farmers are prepared by the Station and sent out free of charge to any one who desires them. A request to this effect, addressed "Agricultural Experiment Station, Raleigh, N. C.," will receive attention.

The Station conducts a large correspondence with farmers and others concerning agricultural matters. It is always glad to receive and to answer questions.

## THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, machinists, electricians, chemists, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Textile Industry, Chemistry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinery-work, Mill-work, Boiler-tending, Engine-tending, and Dynamo-tending.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal edu-

cation are not omitted. Thorough instruction is given in English, Mathematics, History, Civics, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, Physical Geography, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training; nor for lads lacking in physical development, mental capacity, or moral fibre; nor for those that are unable or unwilling to observe regularity, system, and order in their daily work.

### MANUAL TRAINING.

Such special students as desire it, may employ their whole time in manual training. The carpenter shop, the wood-turning shop, the blacksmith shop, the machine shop, the drawing and designing-rooms, the barns, dairies, fields, and green-houses afford facilities wherein young men not desiring a four year course or not able to take it may obtain very useful training and very profitable skill. Youngmen desiring to be mechanics, machinists, electricians, engine-tenders, boiler-tenders, or dynamo-tenders, may find very profitable instruction at the College in a course lasting one year, or even less. Very many lads have come to the institution with practically no advantages of previous training, and have left it fairly well equipped for successful work.

### PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the student in the Freshman Class who earns the largest and the next largest amount of money by agricultural labor on the College farm.

Mr. A. L. Chamberlain offers a prize of \$5 to the student who shall keep the best account of his college expenses during the year.

Mr. A. L. Chamberlain offers a prize of \$5 to the student who shall spend the least amount of money during the college year, exclusive of board, tuition, and fees.

### DISCIPLINE.

The College is under military discipline and the students are regularly organized into a battalion. A printed copy of rules and regulations is furnished each student on admission, and he is expected to conform to the same during his connection with the institution. The



discipline is intended to secure studious and economical habits, with punctuality, system, and order in the performance of all duties. A durable uniform, which is required to be worn on all occasions, prevents extravagance and folly in dress; rooms plainly furnished and a mess-hall economically managed by the College prevent extravagance in living; regular study hours, day and night, with proper restrictions as to visiting Raleigh, check, or at least minimize, tendencies to idleness, vice, and rowdyism.

Regular reports of scholarship and conduct are made to parents and guardians three times a year. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College. Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform-school, and its work must not be hindered by the presence of young men who are grossly and inherently vicious, idle or incompetent.

### COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to the formation of good character, the development of manly physical vigor, and the promotion of literary, scientific, and technical research and training.

**The Young Men's Christian Association**, containing in its membership representatives of all the Christian denominations, meets regularly for conference, study, and worship, and exerts a wholesome influence throughout the College.

**The Pullen and Leazar Literary Societies** afford excellent opportunity for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

**The Alumni Association** meets on Monday of each year preceding Commencement day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This Association has established a Student Aid Fund to assist needy students in obtaining their education at the College by making them small loans.

**The Athletic Association** is intended to promote physical health and manly spirit through athletic sports. Under the direction of the

Athletic Committee of the Faculty, it promotes practice in base-ball, foot-ball, etc. The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

**Secret Societies,** Greek letter fraternities and like organizations are not thought to be for the best interests of the College, and are not permitted.

### REQUISITES FOR ADMISSION.

Applicants for admission must be sixteen years of age and must bring certificates of good moral character from the last school attended. Applicants for admission to the Full (or Technical) Courses and to the Short Courses in Agriculture and Cotton Manufacturing will be examined on the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, Analysis and Composition, and American History. Applicants for admission to the Short (or Manual) Course in Mechanic Arts will be examined on Arithmetic (through decimal fractions), English Grammar and Composition, and American History. Any applicant found deficient in spelling and in power to write simple sentences grammatically will be rejected. Applicants for admission to the Special Courses will not be required to stand any entrance examinations, but they must be over eighteen years of age.

### ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1901 is July 11th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail, or if there should not be room enough for him in the College. Entrance examinations will be held also at the College on the first Wednesday in September of each year. The date for 1901 is September 4th, 9 o'clock A. M.

### ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to Special Courses.
2. School-teachers holding teachers' certificates.
3. Graduates of those High Schools and Academies whose certificates are accepted by the Faculty of this College.

## SESSION.

The College session lasts nine months, opening annually the first Thursday in September and closing the last Wednesday in May, with a vacation of about ten days at Christmas.

## EXPENSES.

The annual expenses are as follows:

Tuition, \$20; Lodging, \$10; Fuel and Lights, \$12.50; Furniture, \$2; Library, \$1; Incidental, \$1; Medical Fee and Medicine, \$4.50; Board, \$72; total, \$123. Payments are made monthly in advance. A fee of \$1 is charged all students reporting for registration after the regular day appointed for that purpose—said fee being placed to the credit of the student loan fund.

Students in the courses in Engineering and in Mechanic Arts taking shop-work are required to make a deposit at the beginning of each year for the use of tools, as follows: Seniors and Juniors, \$1.50; all others, \$2. If the tools are returned in good condition at the end of the year ninety per cent. of these amounts will be refunded to the student. A fee of \$1, no part of which is returnable, must be paid at the beginning of each year by Juniors and Seniors taking drawing.

Students in the chemical laboratory are required to make a deposit at the beginning of the year, to cover breakages, as follows: Sophomores and Juniors, \$2.50; Seniors, \$5; any unused portion of this will be returned at the end of the year.

There is no deduction for less time than one month, except for board. The College uniform costs, including cap, \$13.80, and must be paid for when received. A cheap set of overalls should be purchased for shop and field-work. Each student must supply four sheets, two pillowcases, four towels and two counterpanes, which he can bring from home, and must purchase his own books, stationery, drawing instruments and materials, which he can obtain at the College. Students who are willing to work may reduce their total annual expenses to one hundred dollars.

## UNIFORM.

The College uniform must be worn by all students excepting special students in Agriculture and Mechanic Arts. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. New students are especially cautioned not to bring with them to the College a supply of citizen's clothing, as the uniform must be worn on all occasions.

### FREE TUITION.

Scholarships, conferring free tuition and lodging, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and indorsed by the person recommending him. A scholarship once bestowed will be retained by the holder until graduation, unless he should prove neglectful of his studies or guilty of serious misconduct.

### SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from \$4 to \$10 a month. There is also occasional employment, paying from \$2.50 to \$5 a month. New students should not rely upon securing employment the first four months. Except when arrangements have previously been made with the College authorities, young men in needy circumstances are not advised to come to the College, unless during the year they can have at their command at least one hundred dollars.

### STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient time is given for repayment to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, *alumni* and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to about one hundred and fifty dollars.

## BOARD AND LODGING.

All students are expected to board in the College mess-hall and room in the College dormitories. An abundant supply of plain, nourishing food, with as large variety as possible, is furnished absolutely at cost. The charge at present is \$8 per month, payable in advance, with reduction in case of withdrawal during the month.

Rooms in the College dormitories are supplied with electric lights, steam heat and all necessary furniture, excepting sheets, pillow-cases, bed-spreads and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal. Lodging in the College buildings will not be supplied to special students, who are permitted however, to board in the mess-hall, if they so desire.

Any student over twenty-one years of age is permitted to room and board outside the College.

## CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections, at frequent intervals, are made by the College physician. There is an abundant supply of pure water from twelve deep wells. Each cadet has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing. The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, doctor's office and medicine closet. The rooms are large, well ventilated, well lighted and heated with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as is suitable to hospitals. The College physician visits the Infirmary daily at 10 o'clock, and in cases of serious illness, as frequently as may be required.

## COURSES OF INSTRUCTION.

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The College offers the following Courses of Instruction:

**I. Full (or Technical) Courses** of four years, leading to degrees in:

**1st. Agriculture** (including Agriculture, Horticulture, Animal Industry, Agricultural Chemistry, and Botany).

**2d. Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, and Chemical Engineering).

**3d. Textile Industry** (including Cotton Manufacturing, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, green-houses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The Bachelor's degree is conferred upon any one who completes a Full Course.

**II. Short (or Manual) Courses** of two years (not leading to a degree) in: Agriculture, in the Textile Industry, and in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machinery-work, Mill-work, Boiler-tending, Engine-tending, and Dynamo-tending).

The Short Courses include nearly all the practical work of the Full Courses, with less theoretical instruction. They are intended for students who desire chiefly manual training or for those who are unable to complete the Full Courses.

**III. Special Courses**, requiring about three months in Agriculture, Carpenter-work, Machine Shops, Engine-tending, Boiler-tending, Machine Drawing and Designing. The special courses are intended for persons of limited means, or limited opportunity, who desire special training in a single line.

**IV. Graduate Courses**, extending over two years and leading to advanced degrees, are intended for students who have completed the Full Courses and who desire further instruction and training along special lines. Upon completion of the Graduate Courses the following degrees are conferred: Master of Agriculture, Mechanical Engineer, Civil Engineer, Electrical Engineer, Chemical Engineer.



The Faculty earnestly advises all students to pursue a Full Course of instruction.

## COURSES IN AGRICULTURE.

These courses are intended to educate farmers, stock-raisers, poultry-raisers, dairymen, truckers, florists, fruit-growers, agricultural chemists, botanists, and entomologists.

**I. Full (or Technical) Course,** leading to the degree of Bachelor of Agriculture.

### Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Elements of Agriculture-----	2	2	--
Staple Crops -----	--	--	2
Agricultural Practice -----	2	--	2
Elementary Horticulture -----	--	2	--
Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Elementary Carpentry -----	2	2	--
Elementary Forge Work-----	--	--	2
Algebra -----	4	4	--
Geometry -----	--	--	4
Book-keeping -----	1	1	1
Plant Morphology-----	2	--	2
English-----	3	3	3
Physics,	2	2	2
or			
Phys. Geography, Physiology and Civics,			
or	3	3	3
History,			
Military Drill -----			



## Sophomore Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Agricultural Practice -----	--	--	4
Breeds of Live Stock -----	3	--	--
Dairying -----	--	3	--
Poultry -----	--	--	3
Pomology -----	--	2	2
Horticultural Practice -----	2	2	2
Geometry -----	4	--	--
Trigonometry -----	--	4	--
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
Systematic Botany -----	--	--	2
Entomology -----	2	--	--
English -----	2	2	2
Military Drill -----	3	3	3

## Junior Year.

Meteorology -----	2	--	--
Soil Physics -----	--	--	3
Agricultural Practice -----	--	2	2
Physiological Botany -----	2	--	--
Botanical Laboratory -----	--	2	2
Landscape Gardening -----	2	2	--
Forestry -----	--	--	2
Horticultural Practice -----	2	--	--
Vertebrate Zoology -----	--	3	--
Dairy Bacteriology -----	3	--	--
Stock Feeding -----	--	3	--
Veterinary Medicine -----	--	--	3
Agricultural Chemistry -----	3	3	3
Qualitative Analysis -----	4	4	4
English and History -----	2	2	2
Military Tactics -----	1	1	1
Military Drill -----	3	3	3

## Senior Class. Group A.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Agricultural Economics -----	--	--	3
Agricultural Seminary -----	1	1	1
Agricultural Practice -----	--	2	2
Market Gardening -----	2	--	--
Commercial Floriculture -----	--	2	--
Horticultural Seminary -----	--	--	2
General Biology -----	2	2	2
Biological Laboratory -----	2	2	2
Stock-breeding -----	--	3	--
Geology and Palaeobotany -----	2	2	2
Surveying -----	2	--	--
Surveying (field-work) -----	4	--	--
English -----	2	2	2
Political Economy -----	2	2	2
Military Drill -----	3	3	3

## Senior Class. Group B.

Organic Chemistry -----	2	2	2
Chemical Seminary -----	1	1	1
Quantitative Analysis -----	8	8	8
Geology and Palaeobotany -----	2	2	2
General Biology -----	2	2	2
Biological Laboratory -----	2	2	2
English -----	2	2	2
Political Economy -----	2	2	2
Military Drill -----	3	3	3

## II. Short (or Manual) Course (two years).

## First Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Elements of Agriculture-----	2	2	--
Staple Crops-----	--	--	2
Agricultural Practice-----	2	2	2
Elementary Horticulture-----	--	2	2
Horticultural Practice-----	2	2	2
Dairying-----	--	3	--
Physical Geography-----	2	--	--
Plant Morphology-----	2	--	2
Algebra-----	4	4	--
Geometry-----	--	--	4
Book-keeping-----	1	1	1
English-----	3	3	3
Military Drill-----	3	3	3

## Second Year.

Soil Physics-----	--	--	3
Agricultural Practice-----	2	2	2
Pomology-----	--	2	2
Landscape Gardening-----	2	2	--
Forestry-----	--	--	2
Entomology-----	2	--	--
Breeds of Live Stock-----	3	--	--
Stock-feeding-----	--	3	--
Poultry-----	--	--	3
Dairy Bacteriology-----	3	--	--
Inorganic Chemistry-----	3	3	3
Inorganic Chemistry (laboratory)-----	4	4	4
Elementary Agricultural Chemistry-----	--	2	--
Military Drill-----	3	3	3

**III. Special Course**, beginning January 2, 1902. (No entrance examination required).

	NO. OF HOURS PER WEEK.
Elements of Agriculture .....	2
Agricultural Practice .....	4
Elementary Horticulture .....	2
Horticultural Practice .....	4
Dairying .....	3
Poultry .....	3
Care of Live Stock .....	3
Elementary Agricultural Chemistry .....	2

**IV. Graduate Courses** (2 years), leading to the Degree of Master of Agriculture. These courses will be arranged to suit each individual case.

### COURSES IN CIVIL ENGINEERING.

**I. Full Course**, leading to the Degree of Bachelor of Engineering.

#### Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing .....	4	--	--
Mechanical Drawing .....	--	4	4
Elementary Carpentry .....	4	--	--
Wood-turning .....	--	4	--
Cabinet-making .....	--	--	4
Elementary Forge-work .....	2	2	2
Algebra .....	4	4	--
Geometry .....	--	--	4
Book-keeping .....	1	1	1
Elementary Physics .....	2	2	2
English .....	3	3	3
History, } .....	2	2	2
or			
Physical Geog., Physiology and Civics, } .....	3	3	3
Military Drill .....			

## Sophomore Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam-engine -----	2	--	--
Architecture -----	1	1	1
Architectural Drawing -----	6	6	6
Geometry -----	4	--	--
Trigonometry -----	--	4	--
Analytical Geometry -----	--	--	4
Electricity and Magnetism -----	--	2	2
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
English -----	2	2	2
Military Drill -----	3	3	3

## Junior Year.

Surveying -----	2	2	2
Surveying (field-work) -----	4	4	4
Construction -----	2	--	--
Mechanics -----	3	--	--
Applied Mechanics -----	--	3	3
Drawing -----	4	4	4
Graphic Statics -----	--	2	2
Analytical Geometry -----	5	--	--
Calculus -----	--	5	5
English and History -----	2	2	2
Military Tactics -----	1	1	1
Military Drill -----	3	3	3

## Senior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Strength of Materials -----	3	--	--
Engineering Laboratory -----	--	4	--
Construction -----	--	2	2
Hydraulics -----	--	2	2
Municipal Engineering -----	2	2	2
Surveying (field-work) -----	8	--	6
Roofs and Bridges -----	2	--	--
Bridge Design -----	--	6	4
Calculus -----	2	--	--
Astronomy -----	--	2	2
English -----	2	2	2
Political Economy -----	2	2	2
Military Drill -----	3	3	3

II. Graduate Course (2 years), leading to the Degree of Civil Engineer.

## COURSES IN MECHANICAL ENGINEERING.

I. Full (or Technical) Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Elementary Carpentry -----	4	--	--
Wood-turning -----	--	4	--
Cabinet-making -----	--	--	4
Elementary Forge-work -----	2	2	2
Algebra -----	4	4	--
Geometry -----	--	--	4
Book-keeping -----	1	1	1
Elementary Physics -----	2	2	2
English -----	3	3	3
History, } -----	2	2	2
or } -----			
Physical Geog., Physiology and Civics, } -----	3	3	3
Military Drill -----			

## Sophomore Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam-engine -----	2	--	--
Mechanical Drawing -----	4	4	4
Pattern-making and Moulding -----	4	4	--
Forging and Tempering -----	--	--	4
Geometry -----	4	--	--
Trigonometry -----	--	4	--
Analytical Geometry -----	--	--	4
Electricity and Magnetism -----	--	2	2
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
English -----	2	2	2
Military Drill -----	3	3	3

## Junior Year.

Steam Engineering -----	--	3	3
Mechanics -----	3	--	--
Applied Mechanics -----	--	3	3
Machine Drawing and Designing -----	4	4	4
Valve Gears -----	2	--	--
Mechanical Engineering Laboratory -----	--	2	2
Forging and Tempering -----	4	--	--
Elementary Machinist's Work -----	--	4	4
Analytical Geometry -----	5	--	--
Calculus -----	--	5	5
Electricity and Magnetism -----	3	--	--
Electrical Engineering Laboratory -----	--	4	4
English -----	2	--	--
Military Tactics -----	1	1	1
Military Drill -----	3	3	3



## Senior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engineering -----	2	2	--
Mechanics of Machinery -----	3	3	--
Graphics of Mechanism -----	--	--	3
Boiler Design -----	2	2	2
Machine Design -----	4	4	4
Mechanical Engineering Laboratory -----	4	4	4
Machine Construction -----	6	6	6
Hydraulics -----	--	2	2
Industrial Chemistry -----	--	--	2
Calculus -----	2	--	--
English and Political Economy -----	2	2	2
Military Drill -----	3	3	3

## II. Short (or Manual) Course in Mechanic Arts (two years).

## First Year.

Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	4	8	8
Elementary Carpentry -----	8	--	--
Wood-turning -----	4	4	4
Cabinet-making -----	--	8	8
Elementary Forging -----	4	4	4
Arithmetic -----	5	--	--
Algebra -----	--	5	5
English Composition -----	3	3	3
American History -----	2	2	2
Military Drill -----	3	3	3

## Second Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Technology -----	3	3	3
Machine Drawing and Designing -----	8	8	8
Machine Carpentry and Cabinet-making -----	4	4	--
Foundry-work -----	2	2	2
Forging and Tempering -----	4	4	4
Pattern-making -----	--	--	4
Elementary Machinist's Work -----	8	8	8
Algebra -----	4	4	--
Geometry -----	--	--	4
Book-keeping -----	1	1	1
Elementary Physics -----	2	2	2
or -----			
English -----	3	3	3
Military Drill -----	3	3	3

## III. Special Courses.

(a) Special Course in Carpenter-work. No entrance examination required.

Bench and Machine Carpentry -----	24	24	24
Mechanical Drawing -----	8	8	8
Running Engine, care Shafts and Belting, -----	8	8	8

(b) Special Course in Machine Shop. No entrance examination required.

Machinist's Work -----	24	24	24
Mechanical Drawing -----	8	8	8
Running Engine, care Shafts and Belting, -----	8	8	8

(c) Special Course in Engine and Boiler-tending. No entrance examination required.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Firing Boilers-----	16	16	16
Pipe-fitting-----	8	8	8
Engine-running (valve-setting, etc.)-----	8	8	8
Care of Pumps, Shafts and Belting-----	4	4	4
Mechanical Drawing-----	4	4	4

(d) **Special Course in Machine Drawing and Designing.** No entrance examination required.

Machine Drawing and Designing-----	24	24	24
Shop-work (wood-working)-----	8	8	8
Engine-running, Shafts and Belting-----	8	8	8

**IV. Graduate Courses** (2 years), leading to the Degree of Mechanical Engineer. These courses are arranged to suit each individual case.

### COURSES IN ELECTRICAL ENGINEERING.

**I. Full Course,** leading to the Degree of Bachelor of Engineering.

#### Freshman Year.

Free-hand Drawing-----	4	--	--
Mechanical Drawing-----	--	4	4
Elementary Carpentry-----	4	--	--
Wood-turning-----	--	4	--
Cabinet-making-----	--	--	4
Elementary Forge-work-----	2	2	2
Algebra-----	4	4	--
Geometry-----	--	--	4
Book-keeping-----	1	1	1
Elementary Physics-----	2	2	2
English-----	3	3	3
History, or Phys. Geography, Physiol. and Civics, } Military Drill-----	2 3	2 3	2 3

## Sophomore Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam-engine -----	2	--	--
Mechanical Drawing -----	4	4	4
Forging and Tempering -----	4	--	--
Geometry -----	4	--	--
Trigonometry -----	--	4	--
Analytical Geometry -----	--	--	4
Electricity and Magnetism -----	2	2	2
Physical Laboratory -----	--	4	4
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
English -----	2	2	2
Military Drill -----	3	3	3

## Junior Year.

Electricity and Magnetism -----	3	--	--
Dynamo Machinery -----	--	2	2
Electrical Laboratory -----	4	--	--
Electrical Engineering Laboratory -----	--	4	4
Steam Engineering -----	--	3	3
Mechanics -----	3	--	--
Applied Mechanics -----	--	3	3
Machine Drawing and Designing -----	4	--	--
Analytical Geometry -----	5	--	--
Calculus -----	--	5	5
English and History -----	2	2	2
Military Tactics -----	1	1	1
Military Drill -----	3	3	3

## Senior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Alternating Currents of Electricity-----	3	--	--
Light and Power Plants -----	--	3	3
Electrical Engineering Laboratory -----	6	6	6
Dynamo Design -----	2	2	2
Steam Engineering -----	2	--	--
Mechanical Engineering Laboratory -----	--	4	4
Machine Construction -----	4	4	--
Hydraulics -----	--	2	2
Industrial Chemistry -----	--	--	2
Calculus -----	2	--	--
English -----	2	2	2
Political Economy -----	2	2	2
Military Drill -----	3	3	3

II. Graduate Course (two years), leading to the Degree of Electrical Engineer.

## COURSES IN CHEMICAL ENGINEERING.

For young men seeking employment in the various chemical industries, such as the manufacture of soap, paper, leather, vegetable oils, glass, porcelain, illuminating gas, sulphuric acid, fertilizers, etc.

I. Full Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Elementary Carpentry -----	4	--	--
Wood-turning -----	--	4	--
Cabinet-making -----	--	--	4
Elementary Forge-work -----	2	2	2
Algebra -----	4	4	--
Geometry -----	--	--	4
Book-keeping -----	1	1	1
Elementary Physics -----	2	2	2
English -----	3	3	3
History, } -----	2	2	2
or -----			
Phys. Geography, Physiology and Civics, } -----	3	3	3
Military Drill -----			

## Sophomore Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam-engine -----	2	--	--
Mechanical Drawing -----	4	4	4
Forging and Tempering -----	4	--	--
Geometry -----	4	--	--
Trigonometry -----	--	4	--
Analytical Geometry -----	--	--	4
Electricity and Magnetism -----	--	2	2
Physical Laboratory -----	--	4	4
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
English -----	2	2	2
Military Drill -----	3	3	3

## Junior Year.

Steam Engineering -----	--	3	3
Mechanical Engineering Laboratory -----	--	2	2
Analytical Geometry -----	5	--	--
Calculus -----	--	5	5
Electricity and Magnetism -----	3	--	--
Electrical Laboratory -----	4	--	--
Electrical Engineering Laboratory -----	--	4	4
Organic Chemistry -----	2	2	2
Qualitative Analysis -----	4	4	4
English and History -----	2	2	2
Military Tactics -----	1	1	1
Military Drill -----	3	3	3

## Senior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanics -----	3	--	--
Applied Mechanics -----	--	3	3
Mechanical Engineering Laboratory -----	4	4	4
Industrial Chemistry -----	2	2	2
Chemical Seminary -----	1	1	1
Quantitative Analysis -----	8	8	8
English and Political Economy -----	2	2	2
Elective -----	3	3	3
Military Drill -----	3	3	3

II. Graduate Course (two years), leading to the Degree of Chemical Engineer.

## COURSES IN COTTON MANUFACTURING.

I. Full Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Elementary Carpentry -----	4	--	--
Wood-turning -----	--	4	--
Cabinet-making -----	--	--	4
Elementary Forge-work -----	2	2	2
Algebra -----	4	4	--
Geometry -----	--	--	4
Book-keeping -----	1	1	1
Elementary Physics -----	2	2	2
English -----	3	3	3
History, } or Phys. Geography, Physiology and Civics, }	2	2	2
Military Drill -----	3	3	3



## Sophomore Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam-engine -----	2	--	--
Mechanical Drawing -----	4	4	4
Forging and Tempering -----	4	4	--
Elementary Machinist's Work -----	--	--	4
Geometry -----	4	--	--
Trigonometry -----	--	4	--
Analytical Geometry -----	--	--	4
Electricity and Magnetism -----	--	2	2
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
English -----	2	2	2
Military Drill -----	3	3	3

## Junior Year.

Steam Engineering -----	--	3	3
Electricity and Magnetism -----	3	--	--
Machine Drawing and Designing -----	4	4	4
Carding and Spinning -----	6	6	6
Weaving -----	6	6	6
Textile Designing -----	4	4	4
English and History -----	2	2	2
Military Tactics -----	1	1	1
Military Drill -----	3	3	3

## Senior Year.

Machine Design and Mill Engineering -----	4	4	4
Textile Chemistry and Dyeing -----	2	2	2
Textile Chemistry and Dyeing (laboratory) -----	4	4	4
Carding and Spinning -----	6	6	6
Weaving -----	6	6	6
Textile Designing -----	6	6	6
English and Political Economy -----	2	2	2
Military Drill -----	3	3	3

## II. Short (or Manual) Course (two years).

## First Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
Carding and Spinning -----	6	6	6
Weaving -----	6	6	6
Textile Designing -----	4	4	4
English -----	3	3	3
Military Drill -----	3	3	3

## Second Year.

Carding and Spinning -----	6	6	6
Weaving -----	6	6	6
Textile Designing -----	6	6	6
Textile Chemistry and Dyeing -----	2	2	2
Textile Chemistry and Dyeing (laboratory) -----	4	4	4
Steam-engine -----	2	--	--
Mechanical Drawing -----	4	4	4
Electricity and Magnetism -----	--	2	2
Military Drill -----	3	3	3

## COURSE IN DYEING.

I. Full Course, leading to the Degree of Bachelor of Engineering.

## Freshman Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing -----	4	--	--
Mechanical Drawing -----	--	4	4
Elementary Carpentry -----	4	--	--
Wood-turning -----	--	4	--
Cabinet-making -----	--	--	4
Elementary Forge-work -----	2	2	2
Algebra -----	4	4	--
Geometry -----	--	--	4
Book-keeping -----	1	1	1
Elementary Physics -----	2	2	2
English -----	3	3	3
History, } -----	2	2	2
or -----			
Phys. Geography, Physiology and Civics, } -----	3	3	3
Military Drill -----			

## Sophomore Year.

Steam-engine -----	2	--	--
Mechanical Drawing -----	4	4	4
Forging and Tempering -----	4	4	--
Elementary Machinist's Work -----	--	--	4
Geometry -----	4	--	--
Trigonometry -----	--	4	--
Analytical Geometry -----	--	--	4
Electricity and Magnetism -----	--	2	2
Inorganic Chemistry -----	3	3	3
Inorganic Chemistry (laboratory) -----	4	4	4
English -----	2	2	2
Military Drill -----	3	3	3

## Junior Year.

SUBJECTS.	NUMBER OF HOURS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Textile Chemistry and Dyeing-----	2	2	2
Textile Chemistry and Dyeing (laboratory)-----	4	4	4
Organic Chemistry-----	2	2	2
Qualitative Analysis-----	4	4	4
Textile Designing-----	4	4	4
Electricity and Magnetism-----	3	--	--
Steam Engineering-----	--	3	3
Machine Drawing and Designing-----	4	4	4
English and History-----	2	2	2
Military Tactics-----	1	1	1
Military Drill-----	3	3	3

## Senior Year.

Chemistry of Dye-stuffs-----	2	2	2
Dyeing-----	2	2	2
Dyeing (laboratory)-----	8	8	8
Industrial Chemistry-----	2	2	2
Qualitative Analysis-----	8	8	8
Chemical Seminary-----	1	1	1
English and Political Economy-----	2	2	2
Military Drill-----	3	3	3

## SUBJECTS OF INSTRUCTION.

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The following detailed statement of the subjects of instruction in the College is intended to supply minute information, not only for those who may pursue the regular courses heretofore described, but also for special students seeking instruction in only one or two subjects.

As a rule, students are required to pursue one of the regular courses of instruction, either a full course of four years or a short course of two years; but mature and experienced persons, under the guidance of the Faculty, may pursue special courses, embracing, if desired, only one subject. Such special students are excused from military exercises as well as from wearing the uniform, and are not expected to room in the College dormitories.

### AGRICULTURE.

**1. Elements of Agriculture.**—Bailey's *Principles of Agriculture*. This is a very excellent introduction to the study of Agriculture, treating as it does of the formation of soils, tillage, fertilizers, forage crops, harvesting of crops, etc. It deals more in principles than in facts. Two hours, first and second terms. Required of Freshmen in Agriculture. Professor IRBY.

**2. Staple Crops.**—Lectures. The most important crops of the State are described and discussed. The best methods of preparing the soil for the same and the best cultivation and harvesting of crops. Two hours, third term. Required of Sophomores in Agriculture. Professor IRBY.

**3. Soil Physics.**—French's *Farm Drainage*. A discussion of the physical condition of the soil; farm drainage in all its phases, open ditches, pole drains, stone drains, plank drains, and last and best of all, tile drains. The students are taught to reconnoiter the ground, survey the land, take the levels, dig the ditches, and lay the tile. Three hours, third term. Required of Juniors in Agriculture. Professor IRBY.

**4. Meteorology.**—Waldo's *Meteorology*. Especial attention is paid to the climatology of North Carolina. The students are made to

realize the importance of a knowledge of this new science and its relation to Agriculture. Two hours, first term. Required of Juniors in Agriculture. Professor IRBY.

**5. Agricultural Seminary.**—This consists in reviewing and discussing the leading State and United States bulletins, etc. One hour. Required of Seniors in Agriculture taking Group A. Professor IRBY.

**6. Agricultural Economics.**—Lectures. This consists of a course of lectures and is intended as a "cap stone" for the four years' course, as nearly all the subjects previously discussed are briefly reiterated and emphasized, especially the more practical subjects that have to deal with the business affairs of the farm. It is a final talk with the boys before they go out in the world to pursue their chosen vocations. Different styles of farming are discussed, such as special *vs.* diversified, intensive *vs.* extensive, and the arrangement of those given somewhat in detail. Due attention is given to the selection, arrangement, equipment, and running of farms. Three hours, third term. Required of Seniors in Agriculture taking Group A. Professor IRBY.

## GEOLOGY.

**1. Physical Geography.**—Tarr's *Physical Geography*. Two hours, first term. Required of all Freshmen in Agriculture. Elective for students in Engineering and Textile Industry. Professor MASSEY.

**2. Geology**, with special reference to Palaeontology. Two hours. Required of Seniors in Agriculture. Mr. HYAMS.

## BOTANY.

**1. Plant Morphology.**—Bailey's *Lessons with Plants*. Two hours' practice, first and third terms. Required of Freshmen in Agriculture. Mr. HYAMS.

**2. Systematic Botany.**—Two hours, third term. Required of Sophomores in Agriculture. Mr. HYAMS.

**3. Physiological Botany.**—Lectures. Two hours, first term. Required of Juniors in Agriculture. Professor MASSEY.

**4. Botanical Laboratory.**—Histology. Two hours, second and third terms. Required of Juniors in Agriculture. Mr. HYAMS.

**5. Biology.**—Dodge and Huxley and Martin. Lectures. Two hours. Required of Seniors in Agriculture. Professor MASSEY.

**6. Biology.**—Laboratory work. Two hours. Required of Seniors in Agriculture. Professor MASSEY.

## HORTICULTURE.

1. **Elementary Horticulture.**—Massey's *Trucking in the South*. Two hours, second and third terms. Required of Freshmen in Agriculture. Professor MASSEY.

2. **Market Gardening.**—Lectures on the theory and practice of growing vegetables in the open ground and under glass commercially. Two hours, first term. Required of Seniors in Agriculture taking Group A. Professor MASSEY.

3. **Floriculture.**—Lectures on commercial floriculture, construction of horticultural buildings, green-house management and general trade methods. Two hours, second term. Required of Seniors in Agriculture taking Group A. Professor MASSEY.

4. **Landscape Gardening.**—Lectures on the history of garden art and styles of ornamental gardening, planning of country places and farm-houses and improvement of grounds in general. Two hours, first and second terms. Required of Juniors in Agriculture. Professor MASSEY.

5. **Forestry.**—Lectures on forest influences and methods of forest management, timbers, and forest products. Two hours, third term. Required of Juniors in Agriculture. Professor MASSEY.

6. **Horticultural Practice.**—Two hours. Required of Sophomores in Agriculture. Two hours, first term. Required of Juniors in Agriculture. Mr. RHODES.

7. **Pomology.**—Bailey's *Principles of Fruit Growing*. Two hours, second and third term. Required of Sophomores in Agriculture. RHODES.

8. **Horticultural Seminary.**—Two hours, third term. Required of Seniors in Agriculture taking Group A. Professor MASSEY.

## ZOOLOGY.

1. **Entomology.**—Two hours, first term. Required of Sophomores in Agriculture. Mr. HYAMS.

2. **Human Physiology.**—Lectures. Lectures will be illustrated by charts and models. Two hours, second term. Required of all Freshmen in Agriculture. Elective for Freshmen in Engineering and in Textile Industry. Professor IRBY.

3. **Vertebrate Zoology.**—Packard. This gives them a good general idea of the classification of the animal kingdom, and enables them to study and appreciate animal life and the benefits of the animal kingdom to man. Three hours, second term. Required of Juniors in Agriculture. Mr. JOHNSON.



**ANIMAL INDUSTRY.**

**1. Dairying.**—Wing's *Milk and its Products*. This is a treatise on composition, secretion, testing, and fermenting of milk. Ripening of cream and finishing butter for the market. Three hours, second term. Required of Sophomores in Agriculture. Mr. JOHNSON.

**2. Breeds of Live Stock.**—Curtis's *Horses, Cattle, Sheep, and Swine*. This book gives the student a good general idea of the comparative merits of the different breeds of live stock on the farm.

The "make-up" of a horse is studied and discussed. Why some are strong, and others are fleet, how one breed is developed for the saddle, while another is for the heavy dray, and still another for the turf.

Why some cattle are better for the production of milk, or of butter, while others are adapted for beef production.

How the different breeds of sheep and hogs were developed for their several places. Three hours, first term. Required of Sophomores in Agriculture. Mr. JOHNSON.

**3. Poultry-keeping.**—The origin, history, and classification of the domestic breeds of poultry; breeding, feeding, and management of fowls; locating and arranging the poultry plant, construction of building, incubators, and brooders will be discussed in lectures. Three hours, third term. Required of Sophomores in Agriculture. Mr. JOHNSON.

**4. Dairy Bacteriology.**—Russell's *Dairy Bacteriology*. This course gives the student an idea how cream is ripened, and of the different microscopic developments, beneficial and otherwise, that are going on in the dairy. Three hours, first term. Required of Juniors in Agriculture. Mr. JOHNSON.

**5. Stock-feeding.**—Lectures. Reference books: Armsby, Stewart, and Henry. Topics: best feed stuffs, composition of feeds, balancing of rations, and best methods of caring for stock. Three hours, second term. Required of Juniors in Agriculture. Mr. JOHNSON.

**6. Veterinary Medicine.**—Report of the United States Department of Agriculture on the Diseases of the Horse. Only the most common diseases are discussed and their prevention and treatment given. Three hours, third term. Required of Juniors in Agriculture. Dr. W. E. WEIHE.

**7. Stock-breeding.**—Miles' *Stock-Breeding*. In this they learn the power and importance of heredity, atavism, law of correlation, cross-breeding, and grading. The importance of pedigrees and the keeping of official records is impressed on their minds. How the different

breeds were produced and how the different breeders' associations are formed and maintained. Three hours, second term. Required of Seniors in Agriculture taking Group A. Professor IRBY.

**8. Practice Work.**—Two hours, first and third term. Required of Freshmen in Agriculture. Professor IRBY.

**9. Practice Work.**—Work in barn, dairy, and field correlating with the work in the class-room. Judging cattle with the score-card, milking, feeding the stock, testing milk, running the separator and churn. Practice work will be given in running incubators and brooders; judging and selecting fowls; and preparing poultry for market and keeping records. Four hours, third term. Required of Sophomores in Agriculture. Professor IRBY and Mr. JOHNSON.

**10. Practice Work.**—Two hours, second term. Required of Juniors in Agriculture. Professor IRBY and Mr. JOHNSON.

**11. Practice Work.**—This includes work with stock, work and observation on different field operations, setting up and running of farm machinery, and planning various farm buildings. Two hours, second and third terms. Required of Seniors in Agriculture taking Group A. Professor IRBY.

## ARCHITECTURE.

**1. Architecture.**—Building materials, method of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. One hour throughout the entire year. Required of Sophomores in Civil Engineering. Professor RIDDICK.

**2. Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Six hours. Required of Sophomores in Civil Engineering. Mr. FOY.

## CIVIL ENGINEERING.

**1. Graphical Statics.**—Determination of stresses in frame structures by the graphical methods. Lectures and original problems. Two hours, second and third terms. Required of Juniors in Civil Engineering. Professor RIDDICK.

**2. Surveying.**—Land surveying, leveling, elements of triangulation, topographical surveying, road making. Merriman's *Land Surveying*. Two hours, first term. Required of Juniors in Civil Engineering and of Seniors in Agriculture taking Group A. Mr. ABBOTT.

**3. Railroad Engineering.**—Reconnaissance, preliminary, and

location surveys, cross-sections, etc. Searles' *Field Engineering*. Two hours, second and third terms. Required of Juniors in Civil Engineering. Mr. ABBOTT.

**4. Surveying,** Field-work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes and platting. Four hours. Required of Juniors in Civil Engineering. Four hours, first term. Required of Seniors in Agriculture taking Group A. Mr. ABBOTT.

**5. Municipal Engineering.**—Text-book, Lectures. Two hours, second and third terms. Required of students in Civil Engineering. Professor RIDDICK.

**6. Surveying (Field-work).**—Triangulation and topography, surveys for sewers, water-works, etc. Eight hours, first term; six hours, third term. Required of Seniors in Civil Engineering. Mr. MANN.

**7. Roofs and Bridges.**—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges*. Original problems. Two hours, first term. Required of Seniors in Civil Engineering. Mr. ABBOTT.

**8. Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics*. Two hours, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

**9. Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two hours, first term. Required of Juniors in Civil Engineering. Two hours, first, second, and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

**10. Mechanics of Materials.**—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials*. Three hours, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

**11. Astronomy.**—Descriptive and practical astronomy. Two hours, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

## MECHANICAL ENGINEERING.

**1. Free-hand Drawing.**—An elementary drill in the use of the pencil, beginning with simple forms. Sketches of objects, usually some piece of a machine. Four hours, first term. Required of all Freshmen and first-year class in Mechanic Arts. Mr. CHITTENDEN.

**2a. Elementary Mechanical Drawing.**—Use of instruments. Drawing practice on elementary machine pieces. Elementary projections. Drawings made to scale from working sketches of pieces of machines. Four hours, second and third terms. Required of all Freshmen. Four hours, first term; eight hours, second and third terms. Required of second-year class in Mechanic Arts. Mr. CHITTENDEN and Mr. HUBARD.

**2b. Mechanical Drawing.**—Isometric sketches from mechanical drawings. Elements of machine design. Working sketches and drawings of simple machine parts from the model. Shadow lines. Four hours. Required of Sophomores in Mechanical, Electrical, and Chemical Engineering and in Textile Industry. Mr. CHITTENDEN.

**2c. Mechanical Drawing.**—Isometric sketches from mechanical drawings. Elements of machine design. Working sketches and drawings of simple machine parts from the model. Shadow lines. Sketching and making finished drawings, tracings and blue-prints from tools and machines in shops and laboratories. Elementary designing. Eight hours. Required of second-year class in Mechanic Arts.

**4a. Elementary Carpentry.**—Use of bench tools, working from drawings, principles of correct measurement, lining, planing and sawing, exercises in common joints used in building. Mechanical technology. Four hours, first term. Required of Freshmen in Engineering and in Textile Industry. Eight hours, first term. Required of first-year class in Mechanic Arts. Two hours, first and second terms. Required of Freshmen in Agriculture. Mr. BRAGG.

**4b. Wood-turning.**—Use of wood lathe, care and adjustment of parts, care of pulleys, shafting, and belting, care of lathe tools, elementary wood-turning. Mechanical technology. Four hours, second term. Required of Freshmen in Engineering and Textile Industry. Four hours. Required of first-year class in Mechanic Arts. Mr. CARTER.

**4c. Cabinet-making.**—Construction of brackets, book-shelves, tables, and simple furniture in which the uses and operation of the saw-bench, surface planer, jig saw, lathes, shaper, and other wood-working machines are taught. Mechanical technology. Four hours, third term. Required of Freshmen in Engineering and Textile Industry. Eight hours, second and third terms. Required of first-year class in Mechanic Arts. Mr. BRAGG and Mr. CARTER.

**4d. Machine Carpentry and Cabinet-making.**—Instruction in making sash, doors, blinds, mantels, tables, washstands, and bureaus.

Four hours, first and second terms. Required of second-year class in Mechanic Arts. Mr. BRAGG and Mr. CARTER.

**5a. Elementary Forge-work.**—The names, uses, and care of ordinary forge tools. The fire, its preparation. Effect and adjustment of blast, proper use and economy of fuel. Characteristics of wrought-iron, how affected by heat, forging, welding, burning. Practice in making simple exercises by forging and welding of iron. Two hours. Required of all Freshmen in Engineering. Two hours, third term. Required of Freshmen in Agriculture. Four hours. Required of first-year class in Mechanic Arts. Mr. PARK.

**5b. Forging and Tempering.**—Effect of heat on iron and steel, theory of welding and use of fluxes. Hard and soft steel, welding, hardening, and tempering steel, tool-temper, spring-temper, case hardening. Practice in making iron and steel tools, difficult forging, welding, and tempering. Four hours, third term. Required of Sophomores in Mechanical Engineering. Four hours, first term. Required of Juniors in Mechanical Engineering and Sophomores in Electrical and Chemical Engineering. Four hours, first and second terms. Required of Sophomores in Textile Industry. Four hours. Required of second-year class in Mechanic Arts. Mr. PARK.

**7. Pattern-making.**—Exercises in the construction of patterns of pipe bends, pulleys, valves, and parts of machine tools, with explanations of moulding, draft, shrinkage, fillets, and core boxes. Four hours, first and second terms. Required of Sophomores in Mechanical Engineering. Four hours, third term. Required of second-year class in Mechanic Arts. Mr. BRAGG and Mr. CARTER.

**8a. Elementary Machinist's Work.**—Bench and machine work in iron, steel, and brass. Exercises in chipping straight and grooved surfaces in cast and wrought-iron, in filing to line and to template and in fitting. Exercises on machine tools in centering, chucking, straight and taper-turning, boring, reaming, drilling, planing, milling and shaper-work. Also use and care of hand tools and machine tools. Care of bearings, shafting, belting, pulleys, and similar accessories. Cutting tools, proper form and position of the cutting edge, speed and weight of cutting with different materials. Four hours, second and third terms. Required of Juniors in Mechanical Engineering. Four hours, third term. Required of Sophomores in Textile Industry. Eight hours. Required of second-year class in Mechanic Arts. Mr. PARK.

**8b. Machine Construction.**—Making the parts of some machine or of a steam-engine. Instruction in making tools, such as arbors,



taps, reamers, cutting of gears and the more difficult operations of fitting. Six hours. Required of Seniors in Mechanical Engineering. Four hours, first and second terms. Required of Seniors in Electrical Engineering. Mr. PARK.

**9. Mechanical Technology.**—Tools, their classification and uses. Mechanical principles involved in the construction and use of different hand and machine tools and their adaptation for working various materials. Reference books, printed notes, and shop-talks. Special hours in shop-time. Required of all classes in shop-work. Three hours. Required of second-year class in Mechanic Arts. SHOP INSTRUCTORS.

**10. Steam-engine.**—Descriptive study of Engines and Boilers, covering the details of cylinders, pistons, valves, connecting-rods, bed plates, foundations, and the ordinary types of boilers with their settings. Holmes' *The Steam Engine*, supplemented by sketching from cuts, drawings, and such engines and boilers as are accessible. Two hours, first term. Required of Sophomores in Engineering and Textile Industry. Professor SCRIBNER.

**11. Valve Gears.**—General theory of the slide-valve and link motions and its application in the study and design of the valve mechanism of steam-engines; problems and exercises. McCord's *The Slide Valve*. Two hours, first term. Required of Juniors in Mechanical Engineering. Mr. HUBARD.

**12. Pure and Applied Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Study of materials, law of stress and strain, bending and resisting moment, shear and moment diagrams, shear and elastic curves of cantilever, simple, restrained, and continuous beams, column formulas, torsion, maximum internal stresses, common flexure theory tested by experiment, problems in beams, analysis and design, specifications. Church's *Mechanics of Engineering*. Three hours. Required of all Juniors in Civil, Mechanical, and Electrical Engineering and of Seniors in Chemical Engineering. Professor SCRIBNER.

**13a. Machine Drawing and Designing.**—Making working sketches, finished drawing, tracings and blue prints, from the tools and machines in the laboratories. Designing parts of tools or some piece of mechanism. Four hours. Required of Juniors in Mechanical Engineering and in Textile Industry. Four hours, first term.

Required of Juniors in Electrical Engineering. Professor SCRIBNER and Mr. HUBARD.

**13b. Machine Design.**—Complete design and drawing of some piece of mechanism, involving cam motion, gearing, etc., design of some piece of machinery, such as a punch, shears, riveting machine, crane, pump, hoist, water-motor, etc., studies and sketches of existing machines, determination of dimensions according to practice. *Unwin, Reuleaux, Kent, Haswell, Klein, Weisbach, Richards*, etc. Four hours. Required of Seniors and Post-graduates in Mechanical Engineering. Professor SCRIBNER.

**14a. Steam Engineering.**—Nature and measurement of heat, its effect on gases and water, theory of the Steam-engine. Expansion and cushioning, indicator cards, simple and compound engines, the condenser, steam jacket, steam-engine efficiencies. Types of boilers, materials used, construction, staying, settings, furnaces and chimneys, fittings and appliances, boiler power, use and care of boilers, fuels, and combustion, corrosion and incrustation. *Holmes' Steam Engine, Peabody and Miller's Steam Boilers*, lectures, and reference books. Three hours, second and third terms. Required of all Juniors in Engineering and in Textile Industry. Professor SCRIBNER.

**14b. Steam Engineering.**—Engine Analysis. Mechanics of the reciprocating parts, fly-wheel and governor; various types, such as the plain slide-valve, the Corliss, the high-speed automatic engine; their comparative efficiency and adaptation to varying requirements; commercial efficiency, commercial tests, equipment of power plants. Lecture notes and reference books. Two hours, first and second terms. Required of Seniors in Mechanical Engineering. Two hours, first term. Required of Seniors in Electrical Engineering. Professor SCRIBNER.

**16a. Mechanical Engineering Laboratory.**—Determination of leverages and velocity ratios, testing gauges, indicator springs, weirs, dynamometers, tests of materials for strength, co-efficient of friction, valve-setting, indicator practice. Two hours, second and third terms. Required of Juniors in Chemical and Mechanical Engineering. Professor SCRIBNER and Mr. HUBARD.

**16b. Mechanical Engineering Laboratory.**—Investigation of the efficiency of screws, hoists, and machine tools; efficiency tests of steam boilers, injectors, steam pumps, steam-engines, hot-air engines, gas-engines, motors and dynamos, also of complete power plants. Original experiment and thesis work. Four hours. Required of Seniors and Post-graduates in Mechanical and Chemical Engineering.



Four hours, second and third terms. Required of Seniors in Electrical Engineering. Professor SCRIBNER and Mr. HUBARD.

**17. Mechanics of Machinery.**—Application of the laws of forces to machines, determination of motive or driving forces, including consideration of acceleration, inertia, friction, wear, and efficiency by use of analytical methods; solution of problems. Kennedy's *Mechanics of Machinery*. Also lecture notes and reference books. Three hours, first and second terms. Required of Seniors in Mechanical Engineering. Professor SCRIBNER.

**18. Graphics of Mechanism.**—Analysis of the action of forces on machines by the use of graphical methods. Hermann's *Graphic Statics of Mechanisms*. Also Weisbach and reference books. Three hours, third term. Required of Seniors in Mechanical Engineering. Professor SCRIBNER.

**19. Steam-boiler Design.**—Determination of proper proportions for grate and heating surfaces, area and length of flues and tubes, diameter and thickness of shell, arrangement and proportions of stays, etc., for various forms of boilers. Making sketches and working drawings from original designs. Wilson, Peabody and Miller, Barr, etc. Each student is required to design every part of a boiler after one of the well-known types, stationary, marine or locomotive (no two having the same), and to make complete working drawings and tracings. Two hours. Required of Seniors in Mechanical Engineering. Professor SCRIBNER and Mr. HUBARD.

**20. Steam-engine Design.**—Determination of the proper proportions for cylinders, valves, pistons, rods, shafts, fly-wheels, etc. Making sketches and working drawings from original designs. Unwin's *Machine Design*, Part II. Each student is required to design the principal parts of an engine after one of the well-known types, calculating the parts where the question of strength enters and following the general design of the chosen type where the proportions are matters of experience. Two hours, for Post-graduates. Professor SCRIBNER.

**21. Thermodynamics.**—Mechanical theory of heat. Application to steam, air and gas-engines, and refrigerating machinery. Two hours, for Post-graduates. Professor SCRIBNER.

**22. Hydrodynamics.**—The design of reaction and impulse turbines, measurement of flowing water, description and discussion of experiments. Hydraulic pressure engines. Bodmer's *Hydraulic Motors*. Two hours, for Post-graduates. Professor SCRIBNER.

## PHYSICS.

**1. Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two hours. Required of Freshmen in Engineering and Textile Industry. Elective in the Course in Agriculture.

**2. Elementary Lessons in Electricity and Magnetism.**—Two hours, second and third terms. Required of Sophomores in Engineering and Textile Industry. Three hours, first term. Required of Juniors in Mechanical, Electrical, and Chemical Engineering and Textile Industry.

**3. Physical Laboratory.**—Measurements of length, area, and volume; determinations of density; laws of forces and velocities; pendulum. Four hours, second and third terms. Required of Sophomores in Electrical and Chemical Engineering.

**4. Electrical Laboratory.**—Electric and magnetic measurements. Four hours, first term. Required of Juniors in Electrical and Chemical Engineering.

## ELECTRICAL ENGINEERING.

**1. Dynamo Machinery.**—Practical units. Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two hours, second and third terms. Required of Juniors in Electrical Engineering.

**2. Alternating Currents of Electricity.**—Alternating current generators and motors. Static and rotary transformers. Condensers. Three hours, first term. Required of Seniors in Electrical Engineering.

**3. Electric Light and Power Plants.**—Storage batteries. Transmission of electric power. Three hours, second and third terms. Required of Seniors in Electrical Engineering.

**4. Electrical Engineering Laboratory.**—Standardizing of measuring instruments. Measurements of power. Characteristic curves. Four hours, second and third terms. Required of Juniors in Electrical, Mechanical, and Chemical Engineering.

**5. Electrical Engineering Laboratory.**—Efficiency tests of direct and alternating current dynamos and motors and of transformers. Efficiency tests of electric plants. Photometry. Two hours, throughout the entire year. Required of Seniors in Electrical Engineering.

**6. Designing of Electrical Machinery.**—Design of dynamos, motors, and transformers. Two hours, throughout the entire year. Required of Seniors in Electrical Engineering.

## CHEMISTRY.

**1a. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures and recitations are illustrated with experiments and the exhibition of specimens. Three hours. Required of all Sophomores. Professor WITHERS and Dr. FRAPS.

**1b. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Four hours. Required of all Sophomores. Mr. SYME.

**2. Qualitative Analysis.**—Laboratory work. A. A. Noyes' *Qualitative Analysis*. The student is taught to detect the presence of the more common elements in unknown substances. Stress is laid upon the principles involved in the tests. Four hours. Required of Juniors in Agriculture, Chemical Engineering, and in Dyeing. Mr. SYME.

**3a. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are taken up. Two hours. Required of Juniors in Chemical Engineering and in Dyeing and of Seniors in Agriculture taking Group B. Mr. BIZZELL.

**3b. Organic Chemistry.**—Laboratory work. Orndorff's *Laboratory Manual*. This work is designed to familiarize the student with the more important organic compounds and with the process involved in their preparation. Six hours. Elective for Post-graduates in Chemistry. Dr. FRAPS.

**4a. Quantitative Analysis.**—Laboratory work. After the completion of the determinations involving a training in quantitative manipulation, the work of the student is arranged to correspond with his course of study. Recitations are held from time to time to test the student's knowledge of the chemical changes involved in the determinations. Eight hours. Required of Seniors in Chemical Engineering, in Dyeing, and in Agriculture taking Group B. Professor WITHERS and Mr. BIZZELL.

**4b. Quantitative Analysis.**—Laboratory work. A continuation of 4a. Required of Post-graduates in Chemistry. Professor WITHERS.

**5. Chemical Seminary.**—A review and discussion of current chemical literature. One hour. Required of Seniors in Chemical Engineering, in Dyeing, and in Agriculture taking Group B. Professor WITHERS.

**6a. Elementary Agricultural Chemistry.**—Snyder's *Chemistry of Soils and Fertilizers*. Two hours, second term. Required of special students in Agriculture and of second-year students in the Short Agricultural Courses. Professor WITHERS.

**6b. Agricultural Chemistry.**—Attention is given to a consideration of the atmosphere as a plant-feeder; the constituents of the plant and their functions; the chemistry of soils and fertilizers; the preparation of manures and composts; the composition of feeding-stuffs; the principles of feeding animals, etc. Three hours. Required of Juniors in Agriculture. Professor WITHERS.

**7a. Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry*. A discussion of the processes and principles involved in the more important chemical industries. Two hours, first and second terms. Required of Seniors in Chemical Engineering and in Dyeing. Professor WITHERS.

**7b. Industrial Chemistry.**—A discussion of the materials of engineering. Two hours, third term. Required of Seniors in Mechanical, Electrical, and Chemical Engineering and Dyeing. Professor WITHERS.

**8b. Textile Chemistry and Dyeing.**—Lectures. A study of the chemistry of textile fibres and the principles involved in bleaching, dyeing, and printing. Two hours. Required of Juniors in Dyeing and of Seniors in Cotton Manufacturing. Dr. FRAPS.

**8b. Textile Chemistry and Dyeing.**—Laboratory work. The experiments are designed to accompany Course 8a. The student becomes acquainted with the most important dyes and the methods of applying them. Four hours. Required of Juniors in Dyeing and of Seniors in Cotton Manufacturing. Dr. FRAPS.

**9. Chemistry of Dye-stuffs.**—Nietzki's *Chemistry of the Organic Dye-stuffs*. A study of the chemistry of the dye-stuffs and the processes involved in their manufacture. Two hours. Required of Seniors in Dyeing. Dr. FRAPS.

**10a. Dyeing.**—Lectures. A further study of the properties and modes of application of dye-stuffs and mordants. Two hours. Required of Seniors in Dyeing. Dr. FRAPS.

**10b. Dyeing Laboratory.**—Involves practical work in dye-house and a study of the testing of dyes and their properties. Eight hours. Required of Seniors in Dyeing. Dr. FRAPS.

## COTTON MANUFACTURING.

**1. Carding and Spinning.**—Lectures and recitations; practice in operating card and spinning-room machinery. Cotton; classifying the plant; its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; cards; railway-heads; drawing-frames; slubbers; intermediates; speeders; jacks. Ring spinning-frames and mules. Spoolers and warpers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Six hours. Required of Juniors and Seniors in the full course and of first and second-year students in the short course in Cotton Manufacturing.

**2. Weaving.**—Lectures and recitation; practice in operating looms, warp preparation, cloth-room and finishing machinery. Preparing warp for the looms; section-warpers; beam-warpers; pin-frame warping. Sizing; size-vats; slashers. Drawing-in and reeding. Weaving; hand and power-looms; loom-fixing; plain, box and dobby-looms; explaining and setting the principal motions; producing plain and fancy cotton goods of various coloring, design and texture. Finishing; gray goods and colored cottons; folding and packing for the market. Six hours. Required of Juniors and Seniors in the full course and of first and second-year students in the short course in Cotton Manufacturing.

**3. Textile Designing.**—Lectures and practice in analyzing and constructing fabrics from weave and color stand-point. Fabric structure; warp and filling; plain weaves; weaves constructed on plain basis; twill weaves; weaves based on twills; regular and fancy twills; satin weaves; weaves based on satins; combination weaves. Designing shirtings and cotton dress-goods, plain and fancy; special cotton fabrics. Fabric analysis; structure; coloring and counts of warp and filling; computing costs of yarns and fabrics; yarn and cloth calculations; drafting and chain-building; calculations for reeds and harness. Four hours. Required of Juniors and Seniors in the full course and of first and second-year students in the short course in Cotton Manufacturing and of Juniors in Dyeing.

**4. Mill Engineering.**—Lectures and practice in mill-work, mill construction and mill superintendence. Proper speeds, drafts and production on all machines. Mill construction; equipments; arrange-



ments of machinery; heating; lighting; ventilation; sanitation; power systems; steam, electricity, and water; transmission by belt and by rope. Mill book-keeping and systems of economy. Four hours. Required of Seniors in the full course in Cotton Manufacturing.

### MATHEMATICS.

**1. Arithmetic.**—Begin with decimal fractions and complete the subject. Five hours, first term. Milne's *Standard Arithmetic*. Required of first-year students in short course in Mechanic Arts. Mr. FOY and Mr. MANX.

**2. Algebra.**—Up to quadratic equations. Five hours, second and third terms. Required of students in first year of short course in Mechanic Arts. Well's *Higher Algebra*. Mr. YATES and Mr. ABBOTT.

**3. Advanced Algebra.**—Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four hours, first and second terms. Well's *Higher Algebra*. Required of all Freshmen in full courses and of second-year students in short course in Mechanic Arts. Mr. YATES and Mr. ABBOTT.

**4. Geometry.**—Plane and Solid. Four hours, third term. Required of all Freshmen in full courses and of second-year students in short course in Mechanic Arts. Four hours, first term. Required of all Sophomores. Wentworth's *Plane and Solid Geometry*. Mr. YATES and Mr. ABBOTT.

**5. Trigonometry.**—Four hours, second term. Required of all Sophomores. Mr. YATES.

**6. Analytical Geometry.**—Conic sections, higher plane curves, Geometry of three dimensions. Four hours, third term of Sophomore year, and four hours, first term of Junior year. Required of students in Engineering. Nichols' *Analytical Geometry*. Mr. YATES.

**7. Calculus.**—Differential and integral, elements of differential equations. Five hours, second and third terms of Junior year. Required of students in Engineering. Two hours, first term of Senior year. Required of students in Mechanical, Civil, and Electrical Engineering. Osborne's *Elements of Calculus*. Professor RIDDICK.

**8. Book-keeping.**—The work in the text-books supplemented by numerous original examples and sets for practice. One hour. Required of all Freshmen. Mr. YATES.

## ENGLISH.

**1. Introductory Rhetoric and Composition.**—Scott & Denny's *Composition Rhetoric* and Buehler's *Exercises* are used as texts. These are accompanied by drills on the forms of the language and methods of sentence formation. The student is taught to plan all work, and every effort is made to develop his constructive faculties. Three hours a week. Required of all Freshmen. Professor HILL and Mr. WRIGHT.

**2. Rhetoric.**—Newcomer's *Rhetoric*. The organic parts of discourse and the essential qualities of good style are considered. Especial study is given this year to themes in narration and description. Many exercises are required. Required of all Sophomores. Two hours for two terms. Professor HILL.

**3. Analysis and Construction of Themes in Exposition and Argumentation.**—Two hours, one term. Required of all Seniors.

**4. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two hours for one term. Professor HILL.

**5. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Required of all Seniors. Professor HILL.

## HISTORY.

**1. Ancient and Modern History.**—The student, by means of textbook and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two hours. Required of all Freshmen.

**2. English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two hours, first term. Required of all Juniors.



## CIVICS AND POLITICAL ECONOMY.

**1. Civics.**—This course gives a brief view of the State and Federal Governments, their functions and practical workings, together with a full consideration of the rights and duties of citizenship. Instruction is given by lectures and text-books. Required of Freshmen. Second term, two hours. President WINSTON.

**2. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Seniors. One year, two hours. President WINSTON.

## MILITARY SCIENCE.

**Drill.**—Schools of the Soldier, Company, and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours. Required of all classes. Commandant and officers of the Battalion.

**Tactics.**—Theoretical instruction in the Schools of the Soldier, Company, and Battalion in close and Extended Order; Ceremonies, etc. One hour. Required of all Juniors. Captain PHELPS.

## EQUIPMENT FOR INSTRUCTION.

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The College possesses the following equipment for instruction:

**In Agriculture.**—The farm includes six hundred acres, with one hundred under cultivation, a large basement barn, 50x72 feet, three stories; first floor occupied by cattle; second story by horses, machinery, tools, grain-bins, etc.; third story by hay, which is elevated by a Ricker & Montgomery hay-carrier. Just outside the barn are two seventy-ton circular silos. These are connected with a No. 18 Ohio standard feed and ensilage cutter. The power of cutting is supplied by an eight-horse-power Skinner engine. The farm is supplied with a Kemp manure spreader, Favorite seed drill, cutaway harrows, etc. The dairy building contains three rooms and a cellar, besides a large room above, used as an Agricultural Society hall, in which the students' Agricultural Society meets on Saturday nights. The dairy is supplied with a De Laval, Sharpless, United States, and Reid separators, Babcock tester, rectangular churn, butter-worker, cheap heating apparatus, etc. The cellar is cemented, and has a cemented trough on one side, through which flows water from a spring situated above the dairy. This is an abundant water supply, and serves a useful purpose in ripening cream.

The live stock consists of two grade percheron mares, two mules, a few specimens of pure bred Jersey, Guernsey, Short-horn and Holstein-Friesian cattle, with their grades, and purchased native and grade cows. Poland China and Berkshire swine are bred pure and from high-class specimens, from which breeding stock will be sold as a part of the farm productions.

The poultry-yard is divided into sixteen lots. Buildings consist of basement, incubator-house, brooder-house, and hen-houses. The Cyphers and Prairie State incubators are in use. The poultry-yard contains the following breeds: Black Langshans, White Wyandottes, White and Barred Plymouth Rocks, Black Minorcas, Brown Leg-horns, and Pekin Ducks.

**In Botany.**—The Botanical Laboratory is equipped with sixteen compound microscopes of the best American and European makes, a supply of dissection lenses, and chemicals and staining fluids used in histological work. The Hebarium is fairly good, and is being

added to by collections and exchanges. The collection of weed seeds and of cultivated plants is very full, and is an important factor in the acquirement of a knowledge of the appearance of various seeds and fruits.

**In Horticulture.**—Twenty-three acres of land comprise the Horticultural Experiment farm. There is ample equipment of barns, silos, stock, and machinery. There are five communicating green-houses, separated by glass partitions so that different night temperatures can be maintained to suit the various purposes to which the houses are devoted. In addition, there is one glass structure, without heat, for the culture of foreign grapes. There is kept a general collection of plants for botanical study and for practice in Floriculture, and in two of the houses winter forcing of vegetables and fruits is carried on, in order that the students may have practice in a line of work that is rapidly assuming commercial importance in the State. The building and green-houses are heated in the most complete manner by hot water.

The entire basement of Primrose Hall is used as a Horticultural Laboratory, where practice in grafting, potting, and cross fertilization of plants is constantly going on.

**In Civil Engineering** there is a complete equipment of all instruments necessary to civil engineering field-work.

**In Mechanical Engineering.**—The drawing and recitation-rooms, laboratory and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are a recitation-room, engineering laboratory, machine shop, forge shop, wood-turning shop, and carpenter shop. On the second floor are the office, three drawing-rooms, and a library. In the latter various scientific and technical journals are kept on file, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required. In this way modern engineering practice is made in a measure familiar.

The laboratory is provided with the necessary apparatus for making boiler and engine tests and other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine (both of which were built by the students), a twenty-five-horse-power Woodbury engine, a large Wheeler surface condenser, connected with a  $4\frac{1}{2} \times 6 \times 6$  Blake air-pump, a 50,000-lbs. Riehle stand-

ard screw-power testing machine, a Riehle improved cement testing machine with screw beam and necessary appliances, a large Ericsson hot-air pumping engine, apparatus for making analysis of flue gases, a hydraulic ram, a large Sturtevant fan and engine, a small water-motor, a Worthington water-meter, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, and other apparatus for making tests.

In addition to the laboratory, there is a boiler-house equipped with three thirty-horse-power boilers, several pumps, and a jet condenser, all of which are available for experimental purposes.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; twenty-five 12-inch swing turning lathes, each lathe being fully equipped with turning tools; a rip and cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 30-inch band saw; a large jig saw; a shaper or edge moulding machine, with a very complete set of moulding cutters; a 38-inch grindstone; a wood trimmer; an adjustable mitre-box; a steam glue-heater and a large assortment of screw clamps and of bar carpenters' clamps, both iron and wooden.

The forge shop equipment consists of twenty-three Sturtevant hand forges and two Buffalo blast forges, latter having four fires each, all of which are provided with anvils and tools consisting of swagers, flatters, sets, chisels, etc.

The machine shop contains a 16-inch swing Davis and Eagan lathe with 10-foot bed, a 14-inch Winsor lathe with 3-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with 4-foot bed, a 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, a Brown and Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, a large emery tool-grinding machine. The machine tools have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by a 25-horse-power Woodbury engine. When the shops are running one of the students has charge of the engine and another of the boilers.

**In Physics and Electrical Engineering.**—The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

The electrical engineering laboratory is a small brick building 30 x 50. It contains the electric light plant, consisting of a 35-horse-power automatic Skinner engine, a 11.5 K. W. 110-volt Westinghouse dynamo and a 20 K. W. 2-phase 110-volt Lincoln alternator. The laboratory contains in addition to this one 6-light T. H. arc machine, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens and Halske dynamo, connected in such a way as to give 3-phase currents, one 2-horse-power 3-phase 110-volt Gen. Elect. Co. motor, one 2 K. W. 110-volt LaRoche alternator. It also contains transformers, condensers, arc lamps, circuit breakers, etc.

The department possesses a small library of standard books on all branches of physics and electrical engineering.

**In Chemistry.**—The chemical laboratories are in the Main Building, and are well furnished. The tables are of yellow heart-pine, with oak tops. Each student is provided with one large and two small drawers, and one cupboard for keeping apparatus. Each working space is provided with gas, distilled water, reagents, and a sink. The laboratory for quantitative analysis will accommodate thirty-two students, sixteen of whom may work simultaneously, and the laboratory for general chemistry will accommodate fifty-six students, twenty-eight of whom may work simultaneously.

The laboratory instruction in dyeing is given at present in the chemical laboratory. The department has a collection of five hundred samples of dyes, a large number of sample cards, and many books on dyeing. Ample provision will be made in the Textile Building (to be erected during the summer of 1901) for a dyeing laboratory, dye-house, lecture room, and store-room.

The chemical library contains a carefully selected list of standard reference books and chemical journals, which the more advanced students are expected to use very freely.

**In Textile Industry.**—The General Assembly of North Carolina during its last session made provisions for the erection and equipment of a Textile Building. The site chosen for its location is just west of the Horticultural Building, on a rising eminence admirably



suited to the purpose. The building will be erected during the summer of 1901, and will be ready for occupancy at the beginning of the next College session. It will be two stories in height, with a basement, constructed throughout on the standard mill principles. It will contain carding and spinning, weaving, designing, and dyeing departments, each thoroughly equipped with all the necessary machinery and appliances for illustrating the processes in textile manufacturing.

In addition to the instruction given in the Textile Building, the courses in physics and chemistry, with the well-equipped laboratories of these departments, in mechanical engineering, with the shops and drawing-rooms in the Mechanical Building, in Mathematics and English, are all open to students in Textile Industry.

The following is a list of machinery already erected in College for instruction purposes. It will be largely added to during the coming year:

One 40-inch Saco and Pettee revolving flat card with coiler, 110 flats; one Saco and Pettee single railway head with coiler, metallic rolls, and evening motion; one Saco and Pettee drawing frame, four deliveries, with metallic rolls; one Whitin single railway head with coiler.

One Whitin spinning frame, 64 spindles; one Whitin twister, 48 spindles; one Draper twister, 72 spindles; one Draper spooler, 40 spindles; one Whitin spooler, 40 spindles.

One Draper section warper, 400 ends; one Lewiston Machine Company's beaming machine.

One Universal winding machine, 6 spindles; one Tompkins reel; 50 spindles.

One Northrop loom, 40 inches; one Northrop loom, 28 inches; one Whitin loom, 40 inches; one Kilburn-Lincoln loom, 36 inches; two hand looms.

Complete wet system of fire protection.

Pulleys, shafting, hangers, and couplings from Jones & Laughlins.

One 10-horse-power electric motor from Stanley Electric Co.

**The Library and Reading-rooms.**—The College Library and Reading-rooms are on the second story of the Main Building. The reading-rooms are supplied regularly with about one hundred and twenty-five magazines and journals of various kinds. The library contains about thirty-five hundred volumes. There are also reference libraries in the different departments. During the past year three hundred and forty-nine volumes have been added. The library and

reading-rooms are kept open from 8 A. M. to 6 P. M. Students are encouraged to spend their spare time there reading.

**The Main Building** is of brick, with brownstone trimmings, and is 70 by 60 feet; part four stories in height and the remainder two. The lower floors contain the offices of the President and the Bursar; the library; several recitation-rooms; chemical and physical laboratories, the chapel, and the armory. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are all well lighted, well ventilated, and conveniently arranged.

**The Mechanical Engineering Building** is a plain, substantial, two-story brick building, with large annex. It contains the laboratories, drawing-rooms and recitation-rooms, and shops of the department.

**The Boiler-house** is a single-story brick building, containing boilers, fire-pump, and the machinery connected with the steam-heating plant.

**Primrose Hall** is a two-story brick building, which has attached a fine range of glass structures. The lower, or basement floor, is occupied by the Horticultural laboratory and boiler-room. The upper floor contains a large lecture-room and Botanical laboratory. The plant-houses are five in number, and are immediately accessible from the lecture-rooms and laboratories.

**The Dairy and Barn** are frame buildings, of modern design, and carefully planned for the purposes to which they are devoted. The barn is 50 by 72 feet and three stories high; the dairy is 20 by 40 feet and two stories high; the incubator-house has a stone basement for the incubators and store-room above. The brooder-house is fitted up with fine brooders.



## DONATIONS.

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The College acknowledges with thanks the following donations during the year:

### To the Department of Electrical Engineering.

Storage battery, six cells of 5 inches by 5 inches, from Lipe & Sigler, Cleveland, Ohio.

Storage battery, two cells, 5 by 5 plates, from the Gould Storage Battery Company, New York City.

A complete set of samples of carborundum, manufactured by The Carborundum Company, Niagara Falls, New York.

Sets of samples of incandescent lamps, from The New York and Ohio Company, Warren, Ohio; The Sawyer-Mann Electric Company, Alleghany, Pa.; The Franklin Electric Manufacturing Company, Hartford, Conn.; The Shelby Electric Company, Shelby, Ohio.

A donation of \$100 from the Skinner Engine Company towards buying one of their 35-horse-power self-oiling automatic engines.

Jones & Laughlins, Pittsburg, Pa., shafting, pulleys, hangers, and couplings for electrical engineering laboratory.

### To the Department of Textile Industry.

#### DIVISION OF DYEING.

*American Aniline Company, Philadelphia*—12 samples of direct cotton colors (1 ounce).

*Berlin Aniline Works, New York*—173 samples of dyes (5 ounce); book, "Textile Dyeing"; collection of sample cards.

*C. Bischoff & Co., New York*—19 samples of dyes (1 ounce); collection of sample cards.

*Farbenfabriken of Elberfeld Co., New York*—36 samples of dyes (4 ounce); collection of sample cards.

*Geisenheimer & Co., New York*—35 samples of dyes (3 ounce); collection of sample cards.

*O. S. Junney & Co., Philadelphia*—21 samples of dyes (2 ounce).

*A. Klipstein, New York*—50 samples of dyes (1½ ounce); 10 samples chemicals (8 ounce).

*Victor Koehl & Co., New York*—26 samples of dyes (5 ounce); collection of sample cards; 6 copies "Year Book," and 3 copies book, "The Coal Tar Colors."

*Kuttruff, Pickhardt & Co., New York*—44 samples of dyes (1½ ounce); 4 samples dyes (8 ounce); collection of sample cards.

*W. J. Matheson & Co., New York*—219 samples of dyes (1½ ounce); collection of sample cards; copy of books, "The Diamine Colors" and supplement, "Dye-stuffs, their Properties and Applications"; 16 numbers "Dye-stuffs" (monthly).

*New York and Boston Dyewood Company, New York*—6 quart samples of dyewood extracts.

*The Roessler and Hasslacher Chemical Company, New York*—5 pounds peroxid of sodium.

*Schoelkopf, Hartford and Hanna Company, Buffalo, N. Y.*—Collection of sample cards.

*St. Denis Dye-stuff and Chemical Company of Paris* (through Sykes & Street, Agents, New York)—98 samples of dyes (4 ounce); collection of sample cards; process book.

#### COTTON MANUFACTURING DIVISION.

*Whitin Machine Works, Whitinsville, Mass.* (through Stuart W. Cramer, Southern Agent, Charlotte, N. C.)—Machinery: One Whitin spinning frame, 64 spindles; one Whitin twister, 48 spindles; one Whitin spooler, 40 spindles; one 40-inch Whitin loom; one Whitin railway head with coiler. Supplies: Beam No. 12 yarn, harness, reeds, strapping, shuttles, pickersticks, lease rods, loom beams, harness cams, rigging for 3, 4, and 5 shade work, spools, twister bobbins, roving bobbins, warp and filling bobbins, skewers, sliver cans, extra spinning rings, travelers, belt hooks, change gears for all machines, leather belting.

*Draper Company, Hopedale, Mass.*—One Draper spooler, 40 spindles; one Draper twister, 72 spindles, combination wind, wet and dry, three sizes spindles and rings; one Draper section warper, 400 ends; one 40-inch Northrop loom, supplies and equipment for 2, 3, 4, and 5 shade work; one 28-inch Northrop loom and supplies; warp beams, loom beam heads, filling bobbins, blue-prints of machinery.

*Saco and Pettie Machine Shops, Newton Upper Falls, Mass.* (through A. H. Washburn, Southern Agent, Charlotte, N. C.)—One 40-inch Saco and Pettie revolving flat card with coiler, 110 flats, clothing complete; one Saco and Pettie coiler drawing frame with metallic drawing rolls, four deliveries; one Saco and Pettie railway head with coiler and evener motion.

*D. A. Tompkins Company, Charlotte, N. C.*—One Tompkins reel, 50 spindles; one band machine; two drawing-in frames.

*Universal Winding Machine Company, Boston, Mass.* (through Charles W. Peirce, Southern Agent, Charlotte, N. C.)—One gang Universal winding machine, six spindles; findings for same.

*Kilburn, Lincoln & Co., Fall River, Mass.* (through O. A. Robins, Southern Agent, Charlotte, N. C.)—One 36-inch Kilburn-Lincoln plain sheeting loom.

*Lewiston Machine Company, Lewiston, Me.*—One beaming machine.

*Alexander Bros., Philadelphia, Pa.* (through Odell Hardware Co., Southern Agents, Greensboro, N. C.)—500 feet leather belting.

*Jones & Laughlins, Pittsburg, Pa.*—Shafting, pulleys, hangers, and couplings.

*Metallic Drawing-roll Company, Indian Orchard, Mass.*—Metallic drawing-rolls for drawing frame and railway head.

*General Fire Extinguisher Company, Providence, R. I.*—Wet sprinkler system, complete.

*Charlotte Supply Company, Charlotte, N. C.*—Roving cans.

*Stanley Electric Company, Pittsfield, Mass.* (through F. C. Whitner, Southern Agent, Rock Hill, S. C.)—One 10-horse-power S. K. C. electric motor, starting box, and switch.

*Leonard & Ellis, Philadelphia, Pa., and Charlotte, N. C.*—50 gallons spindle and cylinder oils.

*DeHaven Manufacturing Company, Brooklyn, N. Y.*—Ring-travelers.

### To the Library.

*Professor D. H. Hill*—"A Hero in Homespun," by W. H. Barton.

*G. H. Whiting*—"Barnes's General History," by J. D. and Esther Steele; "Short History of the English People," by J. R. Green.

*Mrs. G. T. Winston*—"Cyrano De Bergerac," by Edmond Rostand; "God in His World," by H. M. Alden; "Homes and How to Make Them," by G. C. Garner; "Letters of Lord Chesterfield"; "The Masque of Pandora," by H. W. Longfellow; "The Nimble Dollar," by C. M. Thompson; "Pictorial Half Hours" (2 vols.); "Plain Thoughts on the Art of Living," by Washington Gladden; "Quo Vadis," by H. Sienkiewicz; "Round My House," by P. G. Hamerton.

# CATALOGUE OF STUDENTS.

## GRADUATES.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>	<i>Major Course.</i>
LESLIE GRAHAM BERRY, B. E. 1900.	Washington,	Beaufort,	Mech. Eng.
FRANCIS MARION FOY, JR., B. S. '99.	Scott's Hill,	Pender,	<u>Elect. Eng.</u>
GARLAND JONES, JR., B. S. 1900.	Raleigh,	Wake,	Chemistry.
CARROLL LAMB MANN, B. S. '99.	Engelhard,	Hyde,	Civil Eng.
EDWIN BENTLY OWEN, B. S. '98.	Michael,	Davidson,	English.
IRA OBED SCHAUB, B. S. 1900.	Culler,	Stokes,	Chemistry.
NUMA REID STANSEL, B. S. '98.	Allenton,	Robeson,	<u>Elect. Eng.</u>
WILLIAM ANDERSON SYME, B. S. '99.	Raleigh,	Wake,	Chemistry.
SOLOMON ALEXANDER VEST, B. S. 1900.	Tobaccoville,	Forsyth,	Chemistry.
GAITHER HALL WHITING, B. S. 1900.	Raleigh,	Wake,	Chemistry.

## SENIOR CLASS.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
FLETCHER HESS BARNHARDT,	Norwood,	Stanly.
WILLIAM OSBORNE BENNETT,	Wadesboro,	Anson.
FRED WILHELM BONITZ,	Wilmington,	New Hanover.
ZOLLY MOSBY BOWDEN,	Redland,	Davie.
BEDFORD JETHRO BROWN,	Charlotte,	Mecklenburg.
PAUL COLLINS,	Raleigh,	Wake.
WILLIAM PESCOD CRAIGE,	Marion,	McDowell.
WILLIAM LOIS CRAVEN,	Concord,	Cabarrus.
FELIX GRAY CRUTCHFIELD,	Winston-Salem,	Forsyth.
GEORGE MASLIN DAVIS,	Greensboro,	Guilford.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
WILLIAM DOLLISON FAUCETTE,	Halifax,	Halifax.
MARION MORGAN HARRIS,	Fairfield,	Hyde.
WILLIAM THEOPHILUS HINTON,	Greensboro,	Guilford.
BENJAMIN OLIVER HOOD,	Asheville,	Buncombe.
MARTIN KELLOGG,	Sunbury,	Gates.
JESSE JAMES LILES,	Wadesboro,	Anson.
LEWIS OMER LOUGEE,	Raleigh,	Wake.
JOHN LUTHER MCKINNON,	Laurinburg,	Scotland.
CHARLES HARDEN MCQUEEN,	Morven,	Anson.
WILLIAM FRANKLIN PATE,	Snow Hill,	Greene.
ISAAC NEWTON SANDERS,	Swansboro,	Onslow.
EDWARD OSCAR SMITH,	Crystal Hill,	Halifax, Va.
WALTER STEPHEN STURGILL,	Sturgill,	Ashe.
BEVERLY NATHANIEL SULLIVAN,	Winston-Salem,	Forsyth.
CHARLES AUGUSTUS WATSON,	Raleigh,	Wake.
BENJAMIN VADEN WRIGHT,	Coharie,	Sampson.

### JUNIOR CLASS.

WILLIAM DAVID BOSEMAN,	Rocky Mount,	Nash.
OLIVER CARTER,	Garland,	Sampson.
JUNIUS SIDNEY CATES,	Sweptsonville,	Alamance.
ROBERT BAXTER COCHRAN,	Statesville,	Iredell.
JAMES LUMSDEN FEREBEE,	Belcross,	Camden.
ROBERT IRVING HOWARD,	Conetoe,	Edgecombe.
LAURIE MOSELEY,	Kinston,	Lenoir.
VASSAR YOUNG MOSS,	Zacho,	Granville.
JAMES LAFAYETTE PARKER,	Cypress Creek,	Bladen.
WILLIAM BENEDICT REINHARDT,	Reinhardt,	Lincoln.
RUSSELL ELSTNER SNOWDEN,	Elizabeth City,	Pasquotank.
JOSEPH PLATT TURNER,	Norwood,	Stanly.
CLEVELAND DOUGLASS WELCH,	Waynesville,	Haywood.

### SOPHOMORE CLASS.

SYDNEY WOODWARD ASBURY,	Burkmont,	Burke.
WILLIAM LEWIS BARLOW, JR.,	Tarboro,	Edgecombe.
WILLIAM MORTON BOGART,	Washington,	Beaufort.
LESLIE NORWOOD BONEY,	Wallace,	Duplin.
JOHN SAMUEL PINKNEY CARPENTER,	Lincolnton,	Lincoln.
BRUCE HERBERT CATES,	Varina,	Wake.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
WALTER CLARK, JR.,	Raleigh,	Wake.
RAY CLEMENT,	Mocksville,	Davie.
JOHN ELIOT COIT,	Salisbury,	Rowan.
SUMMEY CROUSE CORNWELL,	Dallas,	Gaston.
CHARLES LESTER CREECH,	Greensboro,	Guilford.
EUGENE ENGLISH CULBRETH,	Statesville,	Iredell.
WALTER LEE DARDEN,	Goldsboro,	Wayne.
ERNEST LEONIDAS DENTON,	Ormondsville,	Greene.
JUNIUS FRANKLIN DIGGS,	Diggs,	Richmond.
THEOPHILUS THOMAS ELLIS,	Stubbs,	Cleveland.
WELDON THOMPSON ELLIS,	Pearpond,	Vance.
EDWARD EVERITT ETHERIDGE,	Windsor,	Bertie.
JOHN DANIEL FERGUSON,	Bladenboro,	Bladen.
HUGH PIERCE FOSTER,	Nance,	Rockingham.
LAMAR GIDNEY,	Shelby,	Cleveland.
JOHN HOWARD GLENN,	Crowder's Creek,	Gaston.
HARMAN EDWARD GRIMSLEY,	Snow Hill,	Greene.
EMIL GUNTER,	Pierson,	Volusia, Fla.
PERCIVAL HALL,	Winston-Salem,	Forsyth.
WILLIAM ARCHIBALD HEDRICK,	Salisbury,	Rowan.
EUGENE COLISTUS JOHNSON,	Ingold,	Sampson.
JAMES MATTHEW KENNEDY,	McClammy,	Wayne.
EDWARD LEE KNIGHT,	Mildred,	Edgecombe.
BENNETT LAND, JR.,	Elizabeth City,	Pasquotank.
JOHN THOMAS LAND,	Poplar Branch,	Currituck.
GEORGE CORPENING LOVE,	Montezuma,	Mitchell.
EDMOND SHAW LYTCH,	Laurinburg,	Scotland.
JESSE JOHN MORRIS,	Weeksville,	Pasquotank.
PAUL EUGENE MORROW,	Burlington,	Alamance.
SPRUNT NEWTON,	Xenia,	Duplin.
DAVID STARR OWEN,	Fayetteville,	Cumberland.
JOHN HARVEY PARKER,	Hillsboro,	Orange.
WILLIAM ALDERMAN PARKER,	Hillsboro,	Orange.
DUNCAN ALPHEUS PATE,	Gibson,	Scotland.
JAMES HICK PEIRCE,	Warsaw,	Duplin.
JOEL POWERS,	Method,	Wake.
FREDERICK LAWTON RICH,	Seven Springs,	Wayne.
EDWARD HAYS RICKS,	Enfield,	Halifax.
EUGENE THOMAS ROBESON,	Raleigh,	Wake.
JOHN ASHBY ROBERTSON,	Burlington,	Alamance.



<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
GASTON WILDER ROGERS,	Raleigh,	Wake.
CHARLES BURDETTE ROSS,	Charlotte,	Mecklenburg.
BEVERLY LYNWOOD SHARPE,	Harrellsville,	Hertford.
HOWARD SIMPSON,	Simpson Store,	Rockingham.
WILLIAM HENRY SMEAD,	Charlotte,	Mecklenburg.
EDWARD ROE STAMPS,	Raleigh,	Wake.
GEORGE YATES STRADLEY,	Asheville,	Buncombe.
CLARENCE GEORGE SUGG,	Snow Hill,	Greene.
CHARLES EDWARD TROTTER,	Franklin,	Macon.
WRIGHT ELBERT UPCHURCH,	Raleigh,	Wake.
KENNETH CLYDE WAGSTAFF,	Winstead,	Person.
ALFONZO LEWIS WALKER,	Raleigh,	Wake.
JONATHAN WINBORNE WHITE,	Greenville,	Pitt.
JAMES EDWARD WHITFIELD,	Franklinton,	Franklin.
EDWIN SEYMOUR WHITING,	Hamlet,	Richmond.
JAMES LAWSON WIDBY,	Lenior,	Caldwell.

### FRESHMAN CLASS.

NELSON ADAMS,	McColl,	Marlboro, S.C.
HAYWOOD LEWIS ALDERMAN,	Greensboro,	Guilford.
THOMAS JACKSON ARNOLD, JR.,	Beverly,	Randolph, W.Va.
EDWARD PARR BAILEY, JR.,	Wilmington,	New Hanover.
JAMES CLAUDIUS BARBER,	Barber,	Rowan.
WILLIAM WALTON BARBER,	Barber,	Rowan.
WILLIAM ALEXANDER BARRETT,	White Store,	Anson.
WILLIAM L. BELL,	Southport,	Brunswick.
BENNETT BUSEY BOSTIC,	Asheville,	Buncombe.
SHERWOOD BATTLE BROCKWELL,	Raleigh,	Wake.
FRANK HAMILTON BROWN,	Cullowhee,	Jackson.
DAVID RANIE BURTON,	Winston-Salem	Forsyth.
HARLAN GRAVES CARR,	Xenia,	Duplin.
RALPH ADELBERT CARRIER,	West Asheville,	Buncombe.
ARTHUR SANDERS CHESSEON,	Plymouth,	Washington.
EDISON BLACK COUNCIL,	Council Station,	Bladen.
EARLE KENNEDY DUNLAP,	Paris,	Anson.
ERNEST WILLIAM FARMER,	Wilson,	Wilson.
WILLIAM WALTER FINLEY,	North Wilkesboro,	Wilkes.
DAN RUSSELL FOSTER,	Wilmington,	New Hanover.
GEORGE WASHINGTON FOUSHEE,	Greensboro,	Guilford.
EDGAR WILLIAM GAITHER,	Wilmington,	New Hanover.



<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
JOSEPH BRANNER GILMER,	Raleigh,	Wake.
PAUL STIREWALT GRIERSON,	Mooreville,	Iredell.
JOHN ALEXANDER GRIFFIN,	Rippetoe,	Caldwell.
WILLIAM LAWRENCE GRIMES,	Lexington,	Davidson.
JOSEPH PERRIN GULLEY,	Raleigh,	Wake.
WM. LUNSFORD LONG HALL, JR.,	Scotland Neck,	Halifax.
JAMES BENJAMIN HARDING,	Greenville,	Pitt.
FINLEY GWYN HARPER,	Patterson,	Caldwell.
JOHN YOUNG HEDRICK,	Salisbury,	Rowan.
GEORGE HERBERT HODGES,	Kinston,	Lenior.
SOLOMON WALLACE HOFFMAN,	Statesville,	Iredell.
BRANTON FAISON HUGGINS,	Goldsboro,	Wayne.
HILL McIVER HUNTER,	Greensboro,	Guilford.
WILLIAM KERR,	Bryson City,	Swain.
ROBERT ROY KING,	Danbury,	Stokes.
LUTHER HILL KIRBY,	Elkville,	Wilkes.
ERNEST EDWIN LINCOLN,	Kinston,	Lenior.
SEBOR SMEDES LOCKHART,	Wadesboro,	Anson.
WALTER BENTON MCCOLL,	McColl,	Marlboro, S.C.
JOHN FAIRLY MCINTYRE,	Laurinburg,	Scotland.
JAMES MCKIMMON,	Raleigh,	Wake.
MATTHIAS EVANS MANLY,	New Bern,	Craven.
LYMAN MARVIN MARSH,	Progress,	Randolph.
LAWRENCE K. MEARS,	Canton,	Haywood.
JOSEPH ALFRED MILLER,	Brevard,	Transylvania.
LEON ANDREWS NEAL,	Marion,	McDowell.
WILLIAM WATTS NEAL,	Belews Creek,	Forsyth.
ST. CLAIR NEWBERN,	Powell's Point,	Currituck.
FRED CALVIN PARSONS,	Morven,	Anson.
WILLIAM JOEL PATTON,	Brevard,	Transylvania.
FREDERICK COLWELL PHELPS,	Raleigh,	Wake.
ROBERT OWEN PRIMROSE,	Raleigh,	Wake.
WILLIAM RICHARDSON, JR.,	Selma,	Johnston.
CHARLES THOMAS ROGERS,	Newport,	Carteret.
JAMES PICKETT ROSE,	Statesville,	Iredell.
GILBERT ELLIOTT SMITH,	Scotland Neck,	Halifax.
WILLIAM LEWIS SPEIGHT,	Tarboro,	Edgecombe.
ISAAC ANDERSON SUGG,	Greenville,	Pitt.
JAMES CLARENCE TEMPLE,	Sanford,	Moore.
JAMES HENDRICKS THOMPSON,	Connor,	Wilson.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
JOHN SANFORD THOMPSON,	Raleigh,	Wake.
MOORE THOMPSON,	Abbotsburg,	Bladen.
HIRAM ELDRIDGE THROWER,	Henderson,	Vance.
EUGENE TROY,	Greensboro,	Guilford.
PAUL LEE VINSON,	New Bern,	Craven.
MARION EMERSON WEEKS,	Scotland Neck,	Halifax.
DONALD WITHEERSPOON,	Newton,	Catawba.
WALTER ALEXANDER WOOD,	Brevard,	Transylvania.

### SHORT COURSE STUDENTS.

#### Second Year.

EDWIN LYTCH,	Lytch,	Richmond.
WILLIAM FREDERICK McCANLESS,	Salisbury,	Rowan,
DANIEL ALLEN POOL,	Roseland,	Moore.

#### First Year.

GEORGE WASHINGTON ALLEN,	Dillsboro,	Jackson.
SYDNEY GUYPONZO ALLEN,	Wake Forest,	Wake.
WILLIAM LITTLE BAKER,	Dancy,	Pickens, Ala.
GEORGE LEANDER BEALL,	Greensboro,	Guilford.
SOLOMON LUDLOW BIRDSONG,	Raleigh,	Wake.
ARTHUR LESLIE BLACKWELL,	Darlington,	Darlington, S. C.
MASON HAMPLETON BRAWLEY,	Mooreville,	Iredell.
GEORGE THOMAS BUCHAN,	Henderson,	Vance.
ELIAS CARR CARRAWAY,	Kinston,	Lenoir.
HENRY BROZIER CARTWRIGHT,	Elizabeth City,	Pasquotank.
SAMUEL L. COLVERT,	Statesville,	Iredell.
DWIGHT HERT COOK,	Jonesville,	Yadkin.
FRANK E. COVINGTON,	Morven,	Anson.
DAVID LEWIS CROMARTIE,	Cypress Creek,	Bladen.
DICKSON SLOAN CROMARTIE,	Garland,	Sampson.
WILLIAM FLETCHER DAILEY,	Burlington,	Alamance.
ROBERT ISAAC DALTON,	Winston-Salem,	Forsyth.
WILLIAM NICK DALTON,	Winston-Salem,	Forsyth.
WILLIAM EDWARD DUNN,	Scotland Neck,	Halifax.
BENJAMIN BALLARD EGERTON,	Ingleside,	Franklin.
HENRY DAVIS FARRIOR,	Kenansville,	Duplin.
ARCHIBALD STUART HALL,	Scotland Neck,	Halifax.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
WILLIAM WELDON HARDGROVE,	Raleigh,	Wake.
RICHARD HUGH HARPER,	Patterson,	Caldwell.
CHARLES WILLARD HARRELL,	Sunbury,	Gates.
GORDON HARRIS,	Raleigh,	Wake.
JOHN ERAL HEATH,	Waxhaw,	Union.
JOHN HILDRETH HENDERSON,	Hampstead,	Pender.
PAUL HOLBERT HILL,	Germanton,	Stokes.
EDWARD SOLON HOGGARD,	Drew,	Bertie.
AUGUSTUS PRITCHARD HOWARD,	Salemburg,	Sampson.
LEROY ISLER,	Goldsboro,	Wayne.
LEONIDAS JOYNER,	Bunyon,	Beaufort.
GROVER McCLAMMY KING,	Raleigh,	Wake.
JOSEPH MARSHALL LILES,	Wadesboro,	Anson.
WILLIAM CLYDE LYON,	Greensboro,	Guilford.
JOHN KENNETH McFADYEN,	Cameron,	Moore.
WILLIAM McNEIL McKINNON,	Maxton,	Robeson.
FRANK JOSEPH McMURRAY,	Wadesboro,	Anson.
JAMES OSCAR MORGAN,	Etowah,	Henderson.
GARLAND PERRY MYATT,	Raleigh,	Wake.
WALTER CLINTON OWENS,	Colerain,	Bertie.
JOHN ALSEY PARK,	Raleigh,	Wake.
LINUS MARCELLUS PARKER,	Raleigh,	Wake.
OSCAR NATHANIEL PETREE,	Germanton,	Stokes.
ERNEST SPRINGS PHARR,	Charlotte,	Mecklenburg.
PLEASANT HENDERSON POINDEXTER,	Donnoha,	Forsyth.
CLINTON Mc. POWELL,	Asheville,	Buncombe.
JAMES MAXWELL RAMSEY,	Statesville,	Iredell.
GARLAND ATKINSON RICKS,	Nashville,	Nash.
HAL MARCHAND SHAW,	Shawboro,	Currituck.
FRED. WOODWARD SHELLEM,	Raleigh,	Wake.
JULIUS MARION SPEAS,	Boonville,	Yadkin.
GEORGE WIMBERLY SPEIGHT,	Wrendale,	Edgecombe.
SIDNEY SIMS STEVENSON,	Shawboro,	Currituck.
RAY SUMMEY,	Dallas,	Gaston.
DANIEL CHARLES SWINDELL,	Raleigh,	Wake.
GEORGE DUNN TAYLOR,	Jacksonville,	Onslow.
JAMES RODOLPH TAYLOR,	Grafton,	Pitt.
JAMES EUDY THIEM,	Raleigh,	Wake.
ANGELO BENTON TILLINGHAST,	Fayetteville,	Cumberland.
DAVID JAMES TURLINGTON,	Clinton,	Sampson.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
ATLAS THOMAS UZZELL, JR.,	Seven Springs,	Wayne.
STEPHEN DOCKERY WALL,	Rockingham,	Richmond.
CHARLES MANLY WALTON,	Morganton,	Burke.
RALPH OURAY WALTON,	Morganton,	Burke.
WAYNE BRADSHAW WEAVER,	Weaverville,	Buncombe.
ALBERT CLINTON WHARTON,	Clemmons ville,	Forsyth.

### Irregular Students.

WILLIAM DUNN BRIGGS,	Raleigh.	Wake.
ALEXANDER LILLINGTON CLARK,	Weldon,	Halifax.
RALPH IRVIN COUNCIL,	Populi,	Bladen.
JOHN HALSEY CROSS,	Burdette,	Mecklenburg.
WILLIAM BENNETT DUNLAP,	Wadesboro,	Anson.
JOHN LAFAYETTE ENGLISH,	Spruce Pine,	Mitchell.
PAUL HARRIS ELKINS,	Winston-Salem,	Forsyth.
EDWIN FEREBEE FENNER,	Halifax,	Halifax.
JOSEPH EDGAR FULP,	Fulp,	Stokes.
WALTER LINDSAY FULP,	Fulp,	Stokes.
OLIVER MAX GARDNER,	Shelby,	Cleveland.
JOSEPH NELSON GARREN,	Limestone,	Buncombe.
JOHN PERCY GRIMES,	Lexington,	Davidson,
JESSE McRAE HOWARD.	Wadesboro,	Anson.
GEORGE MEYERS McDONALD,	Rockingham,	Richmond.
JAMES LESLIE McNAIR,	Cedar,	Bladen.
CALVIN EGBERT MITCHELL,	Hartsville,	Wake.
CHARLES ARTHUR NICHOLS,	Barnard,	Madison.
JOHN HENRY OSBORNE,	Cleveland Mills,	Cleveland.
BARNIE LEE PARKER,	Hunting Creek,	Wilkes.
JESSE EDGAR PARKER,	Selma,	Johnston.
REA BLACKWELL PARKER,	Como,	Hertford.
JOHN ELLIS PEARSON,	Motor,	Polk.
EUGENE JEFFERSON RANDOLPH,	Colleen,	Nelson, Va.
CHARLES MERCER REEVES,	Mt. Airy,	Surry.
CLAY ERNEST RUTLEDGE,	Long Shoal,	Lincoln.
JOHN HOUSTON SHUFORD,	Sandifer,	Mecklenburg.
CHARLES ALDEN SPAINHOUR,	Lenoir,	Caldwell.
JOSEPH DANIEL SWAIN,	Skinnersville,	Washington.
LLOYD WASH WHITTED,	Tar Heel,	Bladen.
EDWARD YONGE WOOTEN,	Wilmington,	New Hanover.
CHARLES VANCE YORK,	Winston-Salem,	Forsyth.

## Special Students.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
ARTHUR FINN BOWEN,	Raleigh,	Wake.
MARGARET CLEMENT BURKE,	Mocksville,	Davie.
DARO PENDER BYERS,	Shelby,	Cleveland.
WALTER CLIFFORD CROWELL,	Monroe,	Union.
LLOYD MCNEELY FLOWE,	Davidson,	Mecklenburg,
BENJAMIN CECIL JOYNER,	Greenville,	Pitt.
HARLAN MEASE KERSCHNER,	Lexington,	Davidson.
FRANK WOODWARD LAWRENCE,	Murfreesboro,	Hertford.
HENRY BRADLEY PEARCE, JR.,	Selma,	Johnston.
BENJAMIN EDCAR ROGERS,	Clayton,	Johnston.
MILTON NORMAND TADLOCK,	Windsor,	Bertie.
JOHN WALTER UZZELL,	LaGrange,	Lenoir,
LARKIN DOUGLASS WATSON, JR.,	Raleigh,	Wake.
JAMES AUSTIN WHITSETT,	Greensboro,	Guilford.
WILLIAM WALLACE WHITTINGTON,	Greensboro,	Guilford.
PERCY WORTH,	Guilford College,	Guilford.
WILLIAM HENRY WYNNE,	Grindool,	Pitt.

# ELEVENTH ANNUAL COMMENCEMENT.

May 30, 1900.

## DEGREES CONFERRED:

### BACHELOR OF SCIENCE.

#### In Agriculture.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
ROBERT LINN BERNHARDT, Thesis: A Study of the Law of Variations in Animal Life.	Salisbury,	Rowan.
JOHN WADE SHORE, Thesis: The Dairy Industry in North Carolina.	Boonville,	Yadkin.

#### In Science.

SAMUEL MERRILL HANFF, Thesis: Fermentation.	Raleigh,	Wake.
GEORGE ROWLAND HARRELL, Thesis: Orchard Technique.	Kelford,	Bertie.
HENRY ALLEN HUGGINS, Thesis: A Study of the Water Supply of Raleigh for Industrial Purposes.	Wilmington,	New Hanover.
GARLAND JONES, JR., Thesis: Nitrification.	Raleigh,	Wake.
IRA OBED SCHAUB, Thesis: The Chemical Analysis of Pachyma Cocos (Indian Bread), (with Vest).	Culler,	Stokes.
SOLOMON ALEXANDER VEST, Thesis: The Chemical Analysis of Pachyma Cocos (Indian Bread), (with Schaub).	Tobaccoville,	Forsyth.
GAITHER HALL WHITING, Thesis: A Study of some of the Foods Supplied by the Raleigh Market.	Raleigh,	Wake.

### BACHELOR OF ENGINEERING.

KEMP ALEXANDER, Thesis: Design of Electric Light Plant for this College (with Mann and Ross).	Harrisburg,	Cabarrus.
LESLIE LYLE ALLEN, Thesis: A Study of the Raleigh Electric Light and Power Plant.	Louisburg,	Franklin.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
LESLIE GRAHAM BERRY, Thesis: Design of a Transmission Dynamometer.	Washington,	Beaufort.
JAMES HARRY BUNN, Thesis: Design of a Coal Trestle and Chute for Agricultural and Mechanical College (with Smith).	Henderson,	Vance.
LOUIS HENRY MANN, Thesis: Design of Electric Light Plant for this College (with Alexander and Ross).	Middleton,	Hyde.
ROBERT HALL MORRISON, Thesis: Design of Electric Light Plant for Mariposa Cotton Mill.	Mariposa,	Lincoln.
WILLIAM MONTGOMERY PERSON, Thesis: Design and Estimate of Cost of a System of Sewers for North Carolina College of Agriculture and Mechanic Arts, and West Raleigh District (with Rose and Porter).	Kittrell,	Vance,
JUNIUS EDWARD PORTER, Thesis: Design and Estimate of Cost of a System of Sewers for North Carolina College of Agriculture and Mechanic Arts, and West Raleigh District (with Person and Rose).	Emerson,	Bladen.
ROGER FRANCIS RICHARDSON, Thesis: Design of Electric Light Plant for Selma Cotton-seed Oil Mills.	Selma,	Johnston.
WILLIAM EDWIN ROSE, Thesis: Design and Estimate of Cost of a System of Sewers for North Carolina College of Agriculture and Mechanic Arts, and West Raleigh District (with Person and Porter).	Statesville,	Iredell.
FLOYD DE ROSS, Thesis: Design of Electric Light Plant for this College (with Alexander and Mann).	Charlotte,	Mecklenburg.
WILLIAM TURNER SMITH, Thesis: Design of a Coal Trestle and Chute for Agricultural and Mechanical College (with Bunn).	Godwin,	Cumberland.
ROSCOE MARVIN WAGSTAFF, Thesis: Construction of an Instrument for Testing the Springs of Steam-engine Indicators.	Olive Hill,	Person.

### MECHANICAL ENGINEER.

BENJAMIN CARY FENNELL, Thesis: Design of an Apparatus for Testing Transmitting Power of Belts.	Raleigh,	Wake.
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### MASTER OF SCIENCE.

JAMES ADRIAN BIZZELL, Thesis: A Study of the Adulteration of Vinegar and Baking Powders.	Dunn,	Harnett.
HUGH WILLIAMS PRIMROSE, Thesis: A Study of the Preservatives Used in Canned Goods.	Raleigh,	Wake.



**HONORS IN SCHOLARSHIP.**

FLETCHER HESS BARNHARDT,	Stanly County.
WILLIAM DOLLISON FAUCETTE,	Halifax County.
WALTER STEPHEN STURGILL,	Ashe County,

**HONORS FOR PUNCTUALITY.**

WILEY NATHANIEL KREEGER,	Stokes County.
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**PRIZES FOR WORK IN AGRICULTURE.****First Prize.**

PAUL JONES GILLAM,	Bertie County.
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**Second Prize.**

PAUL HARRIS ELKINS,	Forsyth County.
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# REGISTER OF ALUMNI.

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## CLASS OF 1893.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROBERT WILSON ALLEN, Prof. Mathematics, Preston Normal School.	B. E.,	Ridgeway, Md.
SAMUEL ERSON ASBURY, M. S. 1896. Assistant Chemist State Agricultural Department.	B. S.,	Raleigh, N. C.
HENRY EMIL BONITZ, Architect and Superintendent.	B. E.,	Wilmington, N. C.
FRANK FULLER FLOYD, Superintendent Linotype Machines for <i>Knoxville Sentinel</i> .	B. E.,	Knoxville, Tenn.
CHARLES DUFFY FRANCKS, Farmer and Merchant.	B. E.,	Richlands, N. C.
EDWARD MOORE GIBBON, Machinist U. S. Government Dock-yard.	B. E.,	Port Royal, S. C.
GEORGE PENDER GRAY, Farm Manager.	B. S.,	Silver Lake, Fla.
CHARLES BOLLING HOLLADAY, With John L. Williams & Sons.	B. E.,	Richmond, Va.
WILLIAM MCNEILL LYTCH, Locomotive Engineer.	B. E.,	Phoenix, Fla.
WALTER JEROME MATHEWS, Engineer for the Eastern N. C. Asylum for the Insane.	B. E.,	Goldsboro, N. C.
JAMES WILLIAM MCKOY, Civil Engineer and Merchant.	B. E.,	Black Mountain, N. C.
FRANK THEOPHILUS MEACHAM, M. S. 1894. Farm Superintendent State School for Deaf and Dumb.	B. S.,	Morganton, N. C.
CARL DEWITT SELLARS, Engineer for Altamaha Cotton Mills.	B. E.,	Altamaha, N. C.
CHARLES EDGAR SEYMOUR, Farmer and Superintendent of Public Roads.	B. S.,	Louisburg, N. C.
BUXTON WILLIAMS THORNE, Corporation Clerk.	B. E.,	Water Valley, Miss.
WILLIAM HARRISON TURNER, Superintendent Wachovia Mills (F. & H. Fries).	B. E.,	Salem, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES BURGESS WILLIAMS, M. S. 1896. Assistant Chemist State Agricultural Department.	B. S.,	Raleigh, N. C.
LOUIS THOMAS YARBROUGH, With Southern Bell Telephone Co.	B. E.,	Raleigh, N. C.
SAMUEL MARVIN YOUNG, Of S. M. & W. J. Young.	B. E.,	Raleigh, N. C.

### CLASS OF 1894.

CHARLES EDWARD CORPENING, Farmer.	B. E.,	Lenoir, N. C.
DAVID COX, JR., Architect and County Surveyor.	B. E.,	Hertford, N. C.
ROBERT DONNELL PATTERSON, JR., M. S. 1898. With American Tobacco Co.	B. S.,	Durham, N. C.
CHARLES PEARSON, Architect.	B. E.,	Raleigh, N. C.
ZEBBIE GEORGE ROGERS, Secretary and Treasurer.	B. E.,	Danville, Va.
JOHN HYER SANDERS, Locomotive Engineer for Lumber Co.	B. E.,	Chocowinity, N. C.
BENJAMIN FRANKLIN WALTON, Farmer.	B. S.,	Neuse, N. C.
JOHN McCAMY WILSON, Superintendent Cotton Mill.	B. E.,	Spartanburg, S. C.

### CLASS OF 1895.

THOMAS MARTIN ASHE, Deceased.	B. E.,	Raleigh, N. C.
JAMES ADRIAN BIZZELL, M. S. 1900. Instructor in Chemistry N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
JOHN ISHAM BLOUNT, C. E. 1897, M. E. Cornell University. Chief Draughtsman Tenn. Coal, Iron, Steel R. R. Co.	B. E.,	Ensley, Ala.
JAMES WASHINGTON BRAWLEY, Traveling Salesman.	B. S.,	Mooresville, N. C.
WALTER AUSTIN BULLOCK, Superintendent Tobacco Farm.	B. S.,	Bainbridge, Ga.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DAVID CLARK (M. E. Cornell Univ.),	B. E.,	Charlotte, N. C.
M. E. 1896. C. E. 1897. General Manager and Treasurer Ada Cotton Mills.		
GEO. WASHINGTON CORBETT, JR.,	B. E.,	Durham, N. C.
Machinist American Tobacco Company.		
EDWIN SPEIGHT DARDEN,	B. S.,	Wilson, N. C.
With Banner Tobacco Warehouse.		
WILLIAM KEARNEY DAVIS, JR.,	B. E.,	Salem, N. C.
Superintendent Southside Manufacturing Co.		
JOSEPH CHARLES DEY,	B. S.,	Norfolk, Va.
With Williams Bros.		
LEE BORDEN ENNETT,	B. S.,	Cedar Point, N. C.
Farmer.		
ISAAC HENRY FOUST,	B. E.,	Farmer, N. C.
Farmer.		
CHARLES WYLLIS GOLD,	B. S.,	Wilson, N. C.
Business Manager <i>Wilson Times</i> , Editor <i>Dixie Farmer</i> .		
WILLIAM HENRY HARRIS,	B. E.,	Charlotte, N. C.
M. E. 1896. Editor <i>Textile Excelsior</i> .		
CHRISTOPHER MILLER HUGHES,	B. E.,	Raleigh, N. C.
B. S. 1899. With Commercial and Farmers Bank.		
MALCOLM BEALL HUNTER,	B. E.,	Philadelphia, Pa.
Textile Designer.		
SAMUEL CHRISTOPHER MCKEOWN,	B. E.,	Cornwell, S. C.
Superintendent Machine Shops.		
MANN CABE PATTERSON,	B. E.,	Richmond, Va.
With Richmond Locomotive and Machine Works.		
ABRAM HINMAN PRINCE,	B. S.,	Washington, D. C.
U. S. Soil Survey.		
VICTOR VASHTI PRIVOTT,	B. E.,	Pittsburg, Pa.
Construction Engineer.		
HOWARD WISWALL, JR.,	B. E.,	Norfolk, Va.
Inspector United States Engineers.		
CHARLES GARRETT YARBROUGH,	B. E.,	Pittsburg, Pa.
With Westinghouse Electric Company.		
CHARLES MARCELLUS PRITCHETT,	M. E.,	Charlotte, N. C.
C. E. 1896. With D. A. Tompkins Co.		

## CLASS OF 1896.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DANIEL ALLEN,	B. S.,	Raleigh, N. C.
	Daniel Allen & Co.	
GEORGE STRONACH FRAPS,	B. S.,	Raleigh, N. C.
	Ph. D. Johns Hopkins University; Assistant Professor of Chemistry N. C. College of Agriculture and Mechanic Arts.	
MARION JACKSON GREEN,	B. S.,	Charlotte, N. C.
	Foreman Cole Manufacturing Co.	
JOHN HOWARD,	B. S.,	Tarboro, N. C.
	Civil Engineer.	
WILLIAM COLBERT JACKSON,	B. S.,	Ayden, N. C.
	With J. R. Smith & Bro.	
ROBERT GRAHAM MEWBORNE,	B. S.,	Louisville, Ky.
	Chemist Kentucky Tobacco Co.	
LEVI ROMULUS WHITTED,	B. S.,	Norfolk, Va.
	C. E. 1897. Draughtsman in Navy-yard.	
HENRY LLOYD WILLIAMS,	B. S.,	Merchant Mills, N. C.
	Merchant.	

## CLASS OF 1897.

JOSEPH SAMUEL BUFFALOE,	B. S.,	Garner, N. C.
	Physician.	
JOHN WILLIAM CARROLL,	B. S.,	Richmond, Va.
	Student Medical College of Virginia.	
CHARLES EDWARD CLARK,	B. S.,	Charlotte, N. C.
	Truck Farmer.	
WM. ALEXANDER GRAHAM CLARK,	B. S.,	Goldville, S. C.
	M. E. Cornell Univ. With Goldville Cotton Mill.	
NICHOLAS LOUIS GIBBON,	B. S.,	Charlotte, N. C.
	With Stuart Cramer Machine Co.	
CEBURN DODD HARRIS,	B. S.,	Raleigh, N. C.
	Assistant Chemist N. C. Department of Agriculture.	
JERE EUSTIS HIGHSMITH,	B. S.,	Parkersburg, N. C.
	Farmer.	
CLYDE BENNETT KENDALL,	B. S.,	Columbia, S. C.
	Civil Engineer Baltimore & Ohio R. R.	

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
SYDNEY GUSTAVUS KENNEDY, With Newport News Ship Building Co.	B. S.,	Newport News, Va.
JOSEPH LAWRENCE KNIGHT, Turpentine Business.	B. S.,	Jacksonville, Fla.
WALTER JONES McLENDON, JR., Superintendent Wadesboro Cotton Mill.	B. S.,	Wadesboro, N. C.
REPTON HALL MERRITT, Book-keeper Cotton Mill.	B. S.,	McAdenville, N. C.
ALBERT HICKS OLIVER, Dairyman and Farm Superintendent.	B. S.,	New Orleans, La.
HUGH WILLIAMS PRIMROSE, M. S. 1900. Chief Chemist Alabama Steel and Wire Co.	B. S.,	Birmingham, Ala.
WILLIAM HUNTER SANDERS, Assistant Engineer Raleigh Electric Co.	B. S.,	Raleigh, N. C.
THOMAS JEHU SMITHWICK, Electrical Engineer Navy-yard.	B. S.,	Port Royal, S. C.
LEA WATSON, Chief Draughtsman D. A. Tompkins Co.	B. S.,	Charlotte, N. C.
BRADLEY JEWETT WOOTTEN, Lieutenant U. S. Army.	B. S.,	Wilmington, N. C.

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### CLASS OF 1898.

DORSEY FROST ASBURY, Draughtsman New England Ship Building Co.	B. S.,	New London, Conn.
SIDNEY HAMILTON BECK, Draughtsman Newport News Ship-yards.	B. S.,	Newport News, Va.
ANSON ELIKEM COHOON, With Forestry Division Department of Agriculture.	B. S.,	Washington, D. C.
HUGH McCULLOM CURRAN, With Forestry Division Department of Agriculture.	B. S.,	Washington, D. C.
BENJAMIN CAREY FENNELL, M. E., 1900. Draughtsman D. A. Tompkins Co.	B. S.,	Charlotte, N. C.
ALPHEUS ROUNTREE KENNEDY, Draughtsman Newport News Ship-yards.	B. S.,	Newport News, Va.
FREDERICK CREECY LAMB, Student Johns Hopkins University.	B. S.,	Baltimore, Md.
EDWIN BENTLEY OWEN, Librarian N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
MOORE PARKER,	B. S.,	Lowell, Mass.
	Student Lowell Textile School.	
NUMA REID STANSEL,	B. S.,	Raleigh, N. C.
	Instructor in Physics and Electrical Engineering N. C. College of Agriculture and Mechanic Arts.	
TEISAKU SUGISHITA,	B. S.,	Tokyo, Japan.
	Engineer, Imperial Railway of Japan.	
GEORGE FREDERICK SYME,	B. S.,	Raleigh, N. C.
	Acting City Engineer.	

---

### CLASS OF 1899.

WM. DAVIDSON ALEXANDER, JR.,	B. S.,	Charlotte, N. C.
	Acting Superintendent Mecklenburg Iron Works.	
IRA WILSON BARBER,	B. S.,	Port Royal, S. C.
	Engineer, Naval Station.	
JOHN HENDERSON BIRDSONG,	B. S.,	Raleigh, N. C.
	Proprietor Steam Laundry.	
FRANCIS MARION FOY,	B. S.,	Raleigh, N. C.
	Post-graduate Electrical Engineering and Instructor N. C. College of Agriculture and Mechanic Arts.	
ALBERT SIDNEY LYON,	B. S.,	Weldon, N. C.
	Electrician Weldon Electric Lighting Co.	
CARROLL LAMB MANN,	B. S.,	Raleigh, N. C.
	Instructor Mathematics N. C. College of Agriculture and Mechanic Arts.	
O'KELLY WILLIAMS MYERS,	B. S.,	Camden, S. C.
	Civil Engineer, with S. A. L.	
EUGENE LEROY PARKER,	B. S.,	Richmond, Va.
	Assistant Chemist Virginia-Carolina Chemical Co.	
EUGENE GRAY PERSON,	B. S.,	Concord, N. C.
	With Odell Cotton Mill.	
FREDERICK ERASTUS SLOAN,	B. S.,	Weldon, N. C.
	Secretary and Treasurer Weldon Milling Co.	
ANDREW THOMAS SMITH,	B. S.,	Raleigh, N. C.
	Assistant in Shop N. C. College of Agriculture and Mechanic Arts.	
ALEXIS PRESTON STEELE,	B. S.,	Statesville, N. C.
	Of J. C. Steele & Son's Brick Machinery Co.	
WILLIAM ANDERSON SYME,	B. S.,	Raleigh, N. C.
	Instructor in Chemistry N. C. College of Agriculture and Mechanic Arts.	



<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
HUGH WARE,	B. S.,	King's Mountain, N. C. Farmer.
CLAUD BURGESS WILLIAMS,	B. S.,	Richmond, Va. Student University College of Medicine.

## CLASS OF 1900.

KEMP ALEXANDER,	B. E.,	Albemarle, N. C. With Windemere Knitting Mill.
LESLIE LYLE ALLEN,	B. E.,	Newport News, Va. Draughtsman Newport News Ship Building Co.✓
ROBERT LINN BERNHARDT,	B. S.,	Salisbury, N. C. With Salisbury Hardware and Furniture Co.
LESLIE GRAHAM BERRY,	B. E.,	Wilmington, Del. With American Bridge Co.
JAMES HARRY BUNN,	B. E.,	Henderson, N. C. Architect and Contractor.
SAMUEL MERRILL HANFF,	B. S.,	Raleigh, N. C. Instructor Morson's Academy.
GEORGE ROLAND HARRELL,	B. S.,	South Strafford, Vt. Chemist Elizabeth Mining Co.
HENRY ALLEN HUGGINS,	B. S.,	Wilmington, N. C. With Imperial Pine Product Co.
GARLAND JONES, JR.,	B. S.,	Raleigh, N. C. Clerk Department of Agriculture.
LOUIS HENRY MANN,	B. E.,	Baltimore, Md. Student Dental College, University of Maryland.
ROBERT HALL MORRISON,	B. E.,	Mariposa, N. C. Assistant Superintendent Cotton Mill.
WILLIAM MONTGOMERY PERSON,	B. E.,	Bethlehem, Pa. Student Lehigh University.
JUNIUS EDWARD PORTER,	B. E.,	Jacksonville, Fla. Timber Inspector S. A. L.
ROGER FRANCIS RICHARDSON,	B. E.,	Newport News, Va. Draughtsman Newport News Ship Building Co.
WILLIAM EDWIN ROSE,	B. E.,	Wilmington, N. C. With Wilmington Iron Works.
FLOYD DE ROSS,	B. E.,	Charlotte, N. C. Electrician.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
IRA OBED SCHAUB, Student in Chemistry Johns Hopkins University.	B. S.,	Baltimore, Md.
JOHN WADE SHORE, Farmer.	B. S.,	Boonville, N. C.
WILLIAM TURNER SMITH, With Wilmington Iron Works.	B. E.,	Wilmington, N. C.
SOLOMON ALEXANDER VEST, Post-graduate Student in Chemistry N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
ROSCOE MARVIN WAGSTAFF, With Newport News Ship Building Co.	B. E.,	Newport News, Va.
GAITHER HALL WHITING, Post-graduate Student in Chemistry N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.

THE  
NORTH CAROLINA COLLEGE  
OF  
AGRICULTURE AND MECHANIC ARTS,  
WEST RALEIGH.  
1901—1902.



RALEIGH:  
E. M. UZZELL, STATE PRINTER AND BINDER.  
1902.



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## COLLEGE CALENDAR.

1902.

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Thursday,	July	10,	{ Entrance examination at each county court-house, 10 A. M.
Wednesday,	September	3,	{ Entrance examination at the College, 9 A. M.
Thursday,	September	4,	First Term begins; Registration Day.
Thursday,	November	27,	Thanksgiving Day.
Tuesday,	December	22,	First Term ends.

1903.

Friday,	January	2,	Second Term begins; Registration Day.
Saturday,	March	14,	Second Term ends.
Monday,	March	17,	Third Term begins; Registration Day.
Saturday,	May	23,	Examinations end.
Sunday,	May	24,	Baccalaureate Sermon.
Monday,	May	25,	Alumni Day.
Tuesday,	May	26,	Annual Oration.
Wednesday,	May	27,	Commencement Day.

## BOARD OF TRUSTEES.

(State Board of Agriculture).

---

S. L. PATTERSON, *President ex officio*, Raleigh.  
T. K. BRUNER, *Secretary ex officio*, Raleigh.

---

J. B. COFFIELD, Everetts, First District.  
E. L. DAUGHTRIDGE, Rocky Mount, Second District.  
WM. DUNN, Newbern, Third District.  
C. N. ALLEN, Auburn, Fourth District.  
J. S. CUNNINGHAM, Cuningham, Fifth District.  
A. T. MCCALLUM, Red Springs, Sixth District.  
J. P. McRAE, Laurinburg, Seventh District.  
E. G. WAUGH, Dobson, Eighth District.  
W. A. GRAHAM, Machpelah, Ninth District.  
A. CANNON, Horse Shoe, Tenth District.  
HOWARD BROWNING, Littleton.  
J. A. JOYCE, Reidsville.  
G. E. FLOW, Monroe.  
J. C. RAY, Boone.

---

## BOARD OF VISITORS.

W. S. PRIMROSE, *President*, Raleigh.  
R. L. SMITH, *Secretary*, Albemarle.

---

D. A. TOMPKINS, Charlotte.  
FRANK WOOD, Edenton.  
MATT. MOORE, Kenansville.  
W. H. RAGAN, High Point.  
DAVID CLARK, Charlotte.  
J. B. STOKES, Windsor.  
W. J. PEELE, Raleigh.  
J. FRANK RAY, Franklin.  
CHARLES W. GOLD, Wilson.  
GEO. T. WINSTON, President of the College *ex officio*.



## FACULTY.

---

GEORGE TAYLOE WINSTON, A.M., LL.D., President and Professor of Political Economy.

† WILBUR FISK MASSEY, C.E., Professor of Horticulture.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

DANIEL HARVEY HILL, A.M., Professor of English.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Mathematics.

FREDERICK AUGUSTUS WEIHE, M.E., Ph.D., Professor of Physics and Electrical Engineering.

FREDERICK ELISHA PHELPS, Captain U. S. Army (retired), Professor of Military Science and Tactics.

HENRY MERRYMAN WILSON, A.B., Professor of Textile Industry.

CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Professor of Agriculture.

THOMAS MURRITT DICK, U. S. Navy, Professor of Mechanical Engineering.

TAIT BUTLER, V.S., Professor of Veterinary Science.

BENJAMIN WESLEY KILGORE, M.S., Lecturer on Soils and Fertilizers.

ROBERT E. LEE YATES, A.M., Assistant Professor of Mathematics.

GEORGE STRONACH FRAPS, B.S., Ph.D., Assistant Professor of Chemistry.

FRANK LINCOLN STEVENS, M.S., Ph.D., Instructor in Biology.

CHARLES BENJAMIN PARK, Superintendent of Shops.

\* JAMES ADRIAN BIZZELL, M.S., Instructor in Chemistry.

† ALEXANDER RHODES, Instructor in Horticulture.

WILLIAM ANDERSON SYME, B.S., Instructor in Chemistry.

THOMAS ALFRED CHITTENDEN, B.S., Instructor in Mechanical Drawing.

VIRGIL WILLIAM BRAGG, Instructor in Wood-working.

THOMAS NELSON, Instructor in Weaving and Designing.

---

† Resigned.

\* Absent on leave during 1901—1902.

CHARLES LEMUEL FISH, B.S., Instructor in Civil Engineering.  
FRANKLIN SHERMAN, B.S.A., Instructor in Entomology.  
EDWIN BENTLEY OWEN, B.S., Instructor in English.  
WALTER STEPHEN STURGILL, B.E., Instructor in Mathematics.  
HARRY CASPAR WALTER, B.S., Instructor in Electrical Engineering.  
MARTIN EARLEY CARTER, Assistant in Wood-working.  
OLIVER CARTER, Assistant in Forge-work.  
JOHN CHESTER KENDALL, Assistant in Dairying.

### OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Librarian.  
ARTHUR FINN BOWEN, Bursar.  
MRS. ELIZABETH VAN DER VEER DARBY, Stenographer.  
BENJAMIN SMITH SKINNER, Farm Superintendent and Steward.  
JAMES RUFUS ROGERS, A.B., M.D., Physician.  
MRS. DAISY LEWIS, Hospital Matron.

---

### AGRICULTURAL EXPERIMENT STATION DEPARTMENT.

GEORGE TAYLOE WINSTON, A.M., LL.D., President.  
BENJAMIN WESLEY KILGORE, M.S., Director.  
WILLIAM ALPHONSO WITHERS, A.M., Chemist.  
WILBUR FISK MASSEY, C.E., Horticulturist.  
CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Agriculturist.  
TAIT BUTLER, V.S., Veterinarian.  
GEORGE STRONACH FRAPS, Ph.D., Assistant Chemist.  
\* JAMES ADRIAN BIZZELL, M.S., Assistant Chemist.  
BENJAMIN SMITH SKINNER, Assistant Agriculturist.  
† ALEXANDER RHODES, Assistant Horticulturist.  
HARRY PUTNAM RICHARDSON, B.S., Poultryman.  
ARTHUR FINN BOWEN, Bursar.  
MRS. ELIZABETH VAN DER VEER DARBY, Stenographer.

---

\* Absent on leave during 1901—1902.

† Resigned.

**MILITARY ORGANIZATION.**

CAPTAIN FREDERICK E. PHELPS, U. S. Army (retired),  
Commandant.

**Staff.**

RUSSELL E. SNOWDEN, Major.  
R. BAXTER COCHRAN, First Lieutenant and Adjutant.  
OLIVER CARTER, First Lieutenant and Quartermaster.

**Non-commissioned Staff.**

CHARLES L. CREECH, Sergeant-major.  
HUGH P. FOSTER, Quartermaster Sergeant.  
O. MAX GARDNER, Color Sergeant.

**Band.**

J. PLATT TURNER, Captain.  
EUGENE T. ROBESON, First Lieutenant and Instructor.  
WILLIAM A. PARKER, Second Lieutenant.  
J. H. PARKER, First Sergeant.  
H. L. ALDERMAN, Chief Musician.  
D. R. FOSTER, Drum-major.

**Company A.**

JAMES L. FEREBEE, Captain.  
WILLIAM D. BOSEMAN, First Lieutenant.  
LESLIE N. BONEY, Second Lieutenant.  
J. D. FERGUSON, First Sergeant.  
L. GIDNEY, Second Sergeant.  
E. S. LYTOCH, Third Sergeant.  
G. W. ROGERS, Fourth Sergeant.  
J. H. GLENN, Fifth Sergeant.  
\*J. B. HARDING, First Corporal.  
J. C. TEMPLE, Second Corporal.  
E. S. HOGGARD, Third Corporal.  
\*E. C. CARRAWAY, Fourth Corporal.  
\*F. G. HARPER, Fifth Corporal.

**Company D.**

CLEVELAND D. WELCH, Captain.  
JUNIUS S. CATES, First Lieutenant.  
EUGENE E. CULBRETH, Second Lieutenant.

J. F. DIGGS, First Sergeant.  
W. L. DARDEN, Second Sergeant.  
W. T. ELLIS, Third Sergeant.  
C. E. TROTTER, Fourth Sergeant.  
J. M. KENNEDY, Fifth Sergeant.  
\*C. T. ROGERS, First Corporal.  
\*F. C. PHELPS, Second Corporal.  
\*P. S. GRIERSON, Third Corporal.  
M. E. WEEKS, Fourth Corporal.  
M. E. MANLY, Fifth Corporal.

### Company B.

VASSAR Y. MOSS, Captain.  
ROBERT I. HOWARD, First Lieutenant.  
WILLIAM B. REINHARDT, Second Lieutenant.  
S. W. ASBURY, First Sergeant.  
E. GUNTER, Second Sergeant.  
S. W. WHITE, Third Sergeant.  
E. S. WHITING, Fourth Sergeant.  
E. R. STAMPS, Fifth Sergeant.  
E. E. LINCOLN, First Corporal.  
J. A. MILLER, Second Corporal.  
J. M. LILES, Third Corporal.  
H. M. HUNTER, Fourth Corporal.  
J. Y. HEDRICK, Fifth Corporal.

### Company C.

LAURIE MOSELEY, Captain.  
JAMES L. PARKER, First Lieutenant.  
J. HOUSTON SHUFORD, Second Lieutenant.  
S. C. CORNWELL, First Sergeant.  
W. M. BOGART, Second Sergeant.  
E. C. JOHNSON, Third Sergeant.  
D. S. OWEN, Fourth Sergeant.  
H. SIMPSON, Fifth Sergeant.  
\*W. RICHARDSON, First Corporal.  
G. H. HODGES, Second Corporal.  
L. A. NEAL, Third Corporal.  
J. E. GULLEY, Fourth Corporal.  
E. P. BAILEY, Fifth Corporal.

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\* Color Corporal.

## GENERAL INFORMATION.

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The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and the late R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that, in the industrial life of North Carolina, the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was introduced in 1885, the bill which afterwards became a law having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill introduced by Senator Justin S. Morrill of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to \$7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was donated by the late R. S. Pullen. The College was formally opened for students October 1, 1889, with one building and five teachers.

Additional funds were provided afterwards by the National Congress for the support of the College and the State Agricultural Experiment Station, which is now a department of the College.

An annual appropriation of \$10,000 is made by the Legislature of North Carolina. With the exception of special appropriations, made from time to time by the Legislature, this is the only money received directly from the State.

The College is beautifully located on the extension of Hillsboro street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from twelve deep wells. The water is analyzed both chemically and bacteriologically at regular periods.

The College now owns six hundred acres of land and thirteen buildings, and its teaching force consists of thirty persons. Its laboratories, drawing-rooms, and workshops are well equipped. Its library contains three thousand volumes, and its reading-room is well supplied with popular literary and technical journals.

### BUILDINGS.

**The Main Building** is of brick, with brownstone trimmings, and is 70 by 60 feet; part four stories in height and the remainder two. The lower floors contain the offices of the President and the Bursar; the library; several recitation-rooms; chemical and physical laboratories, the chapel, and the armory. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are all well lighted, well ventilated, and conveniently arranged.

**The Mechanical Engineering Building** is a plain, substantial, two-story brick building, with large annex. It contains the laboratories, drawing-rooms and recitation-rooms, and shops of the department.

**The Boiler-house** is a single-story brick building, containing boilers, fire-pump, and the machinery connected with the steam-heating plant.

**Primrose Hall** is a two-story brick building, which has attached a fine range of glass structures. The lower, or basement floor, is occupied by the Horticultural laboratory and boiler-room. The upper floor contains a large lecture-room and Botanical laboratory. The plant-houses are five in number, and are immediately accessible from the lecture-rooms and laboratories.

**The Dairy and Barn** are frame buildings, of modern design, and carefully planned for the purposes to which they are devoted. The barn is 50 by 72 feet and three stories high; the dairy is 20 by 40 feet and two stories high; the incubator-house has a stone basement for the incubators and store-room above. The brooder-house is fitted up with fine brooders.

**The Textile Building** is a two-story brick building 125 by 75 feet with a basement and was completed during the present college year. Its construction is similar to a cotton-mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp



preparation machinery, and the second floor the carding and spinning machinery.

**Watauga Hall**, which contained the kitchen, dining-room and several dormitory-rooms was destroyed by fire in November. It will be rebuilt and enlarged during the present year and be ready for occupancy in September.

**Pullen Hall.**—The Trustees have authorized the erecting of a building containing Library and Reading-rooms, a Dining-room for 500, an Auditorium for 800, and some Lecture-rooms. The building will be called Pullen Hall in honor of the late R. Stanhope Pullen.

**The Infirmary** is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, doctor's office and medicine closet. The rooms are large, well ventilated, well lighted and heated with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as is suitable to hospitals.

Four two-story brick buildings are used exclusively for dormitories.

The College is supplied with a steam fire-pump, reservoir, hydrants, and fire hose to protect the building from burning.

### THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly, ratified March 12, 1877. Its work was greatly promoted by Act of Congress of March 2, 1877, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill which subsequently became a law was introduced by Representative Wm. H. Hatch of Missouri.

The Experiment Station offices and laboratories are located in the Main Building of the College. The horticultural experiment farm contains twenty-three acres, and is well equipped with barns and other necessary houses. For agricultural experiments, sufficient land is reserved on the College farm, about twenty-five acres being appropriated to this purpose annually. Publications for the benefit of truckers, nurserymen, stock men and other farmers are prepared by the Station and sent out free of charge to any one who desires them. A request to this effect, addressed "Agricultural Experiment Station, Raleigh, N. C.," will receive attention.

The Station conducts a large correspondence with farmers and others concerning agricultural matters. It is always glad to receive and to answer questions.



## THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinery-work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending, and Road-building.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training; nor for lads lacking in physical development, mental capacity, or moral fibre; nor for those that are unable or unwilling to observe regularity, system, and order in their daily work.

## MANUAL TRAINING.

Such special students as desire, may employ their whole time in manual training. The carpenter shop, the wood-turning shop, the blacksmith shop, the machine shop, the drawing and designing-rooms, the barns, dairies, fields, and green-houses afford facilities wherein young men not desiring a four year course or not able to take it may obtain very useful training and very profitable skill. Young men desiring to be mechanics, machinists, electricians, engine-tenders, boiler-tenders, or dynamo-tenders, may find very profitable instruction at the College.

## PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the student in the Freshman Class who earns the largest and the next largest amount of money by agricultural labor on the College farm.

Mr. A. L. Chamberlain offers a prize of \$5 to the student who shall keep the best account of his college expenses during the year.

Mr. A. L. Chamberlain offers a prize of \$5 to the student who shall spend the least amount of money during the college year, exclusive of board, tuition, and fees.

The Arthur H. Thomas Company of Philadelphia offers to the Biological Club as first and second prizes two "Aplanatic Triplet" hand magnifiers to be awarded for the most deserving work in biology.

The Vermont Farm Machine Company offers a prize of their No. 7 United States Separator for the student doing the best all-round work in dairying.

P. M. Sharples, West Chester, Pa., offers a Butter Cup Separator to the student standing high in dairy work, and presenting the best paper on Dairying in North Carolina.

The Zenner Disinfectant Company offers a silver medal for the best report of the live stock exhibit at the State Fair.

The D. M. Osborne Company, Charlotte, N. C., gives a prize of an Osborne Mower to the student preparing the best essay on the "Place of Farm Machinery in North Carolina Agriculture."

## DISCIPLINE.

The College is under military discipline and the students are regularly organized into a battalion. A printed copy of rules and regulations is furnished each student on admission, and he is expected to conform to the same during his connection with the institution. The discipline is intended to secure studious and economical habits, with punctuality, system, and order in the performance of all duties. A durable uniform, which is required to be worn on all occasions, prevents extravagance and folly in dress; rooms plainly furnished and a mess-hall economically managed by the College prevent extravagance in living; regular study hours, day and night, with proper restrictions as to visiting Raleigh, check, or at least minimize, tendencies to idleness, vice, and rowdysm.

Regular reports of scholarship and conduct are made to parents and guardians three times a year. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or mani-

festly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College. Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform-school, and its work must not be hindered by the presence of young men who are grossly and inherently vicious, idle or incompetent.

### LIBRARY AND READING-ROOMS.

The College Library and Reading-rooms are on the second story of the Main Building. The reading-rooms are supplied regularly with about one hundred and twenty-five magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about thirty-five hundred volumes. There are also reference libraries in the different departments. The library and reading-rooms are kept open from 8 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

### LIBRARY FACILITIES.

The Olivia Raney Library in Raleigh, containing now about seven thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

### STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

### COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to the formation of good character, the development of manly physical vigor, and the promotion of literary, scientific, and technical research and training.

The Young Men's Christian Association, containing in its membership representatives of all the Christian denominations, meets regularly for conference, study, and worship, and exerts a wholesome influence throughout the College.

The Pullen and Leazar Literary Societies afford excellent opportunity for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

**The Dramatic Club** presents at least one play each year to the theatre-going people of Raleigh. The plays selected are high-classed, offering full opportunities for artistic and clever acting. Sheridan's "The Rivals" (this year's performance), was a most successful and artistic performance.

**The Athletic Association** is intended to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty, it promotes practice in base-ball, foot-ball, etc. The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

**The Biological Club** meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture.

**The Liebig Chemical Society** meets fortnightly for the discussion of chemical subjects and for review of the current chemical literature with which the College is well supplied.

**Electrical Engineering Society.**—The members of the Society meet once a week in the physical laboratory. The work done consists in a review of current literature of electrical engineering. The Society has at its disposal the best periodicals, most of which are furnished free of charge by the publishers.

**Farmers' Institute.**—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and the writing and reading of reports on the several phases of farming.

**The Rural Science Club** meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

**Secret Societies**, Greek letter fraternities and like organizations are not thought to be for the best interests of the College, and are not permitted.

**The Alumni Association** meets on Monday of each year preceding Commencement day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This Association has established a Student Aid Fund to assist needy students in obtaining their education at the College by making them small loans.

## REQUISITES FOR ADMISSION.

Applicants for admission must be at least sixteen years of age and must bring certificates of good moral character from the school last attended.

**To the Four Year Courses.**—Applicants for admission to the Freshman Class of all four year courses will be examined on the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation or division into paragraphs.

**To the Two Year Courses.**—Applicants for admission to the two year courses in Textile Industry and in Dyeing will take the same examinations as those required of candidates for admission to the Freshman Class. Applicants for admission to the two year courses in Agriculture and in Mechanic Arts will be examined on Arithmetic (through decimal fractions), English Grammar and Composition, and American History.

Applicants for admission to the two year courses in Agriculture and Mechanic Arts, if they are twenty years of age, will not be required to take the entrance examinations.

**To the Special Courses.**—No entrance examination is required of candidates for admission to the Special Courses. No one under eighteen years of age will be admitted to a special course.

## TIME OF EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1902 is July 10th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail, or if there should not be room enough for him in the College. Entrance examinations will be held also at the College on the first Wednesday in September of each year. The date for 1902 is September 3d, 9 o'clock A. M.

## ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to Special Courses over eighteen years of age.
2. Applicants for admission to the two year courses in Agriculture and Mechanic Arts if they are over twenty years of age.



3. School-teachers holding teachers' certificates.
4. Graduates of those High Schools and Academies whose certificates are accepted by the Faculty of this College.

### SESSION.

The College session lasts nine months, and opens annually the first Wednesday in September and closes the last Wednesday in May, with a vacation of about ten days at Christmas.

### EXPENSES.

The annual expenses are as follows:

Tuition, \$20; Lodging, \$10; Fuel and Lights, \$12.50; Furniture, \$2; Library, \$1; Incidental, \$1; Medical Fee and Medicine, \$4.50; Board, \$72; total, \$123. Payments are made monthly in advance. A fee of \$1 is charged all students reporting for registration after the regular day appointed for that purpose—said fee being placed to the credit of the student loan fund.

Students in the four year courses taking shop-work are required to pay a fee of \$1 at the beginning of each year for material and the use of tools. A similar fee of \$1 is collected from four year course students taking drawing. Students in the two year courses in Mechanic Arts and in the Special Courses in Shop-work and Drawing pay a fee of \$1.50 instead of \$1.

Students in the chemical laboratory are required to make a deposit at the beginning of the year, to cover breakages, as follows: Sophomores and Juniors, \$2.50; Seniors, \$5; any unused portion of this will be returned at the end of the year.

Textile students will make a deposit of \$5 at the beginning of the year, to cover cost of designing supplies, tools, etc., any unused portion of which will be returned at the end of the year.

There is no deduction for less time than one month, except for board. The College uniform costs, including cap, about \$13.85, the uniform overcoat \$10 to \$13, one pair overshoes 75 cents to \$1, and must be paid for when received. A cheap set of overalls should be purchased for shop and field-work. *Each student must supply four sheets, two pillow-cases, four towels and two counterpanes, which he can bring from home, and must purchase his own books, stationery, drawing instruments and materials, which he can obtain at the College.* Students who are willing to work may reduce their total annual expenses to one hundred dollars.

### UNIFORM.

The College uniform must be worn by all students excepting special students in Agriculture and Mechanic Arts. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. New students are especially cautioned not to bring with them to the College a supply of citizens' clothing, as the uniform must be worn on all occasions.

### FREE TUITION.

Scholarships, conferring free tuition and lodging, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him. A scholarship once bestowed will be retained by the holder until graduation, unless he should prove neglectful of his studies or guilty of serious misconduct.

One hundred and twenty-five scholarships have been established by the Board of Agriculture for students in the four year and two year courses in Agriculture. These scholarships cover tuition, and are available for the time the student is in college. They also cover room rent if the College dormitories are not otherwise occupied.

### SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from \$4 to \$10 a month. There is also occasional employment, paying from \$2.50 to \$5 a month. New students should not rely upon securing employment the first four months. Except when arrangements have been previously made with the College authorities, young men in needy circumstances are not advised to come to the College, unless during the year they can have at their command at least one hundred dollars.

### STUDENT LOAN FUND.

The Almuni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient



time is given for repayment to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, *alumni* and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to about three hundred dollars.

### BOARD AND LODGING.

All students are expected to board in the College mess-hall and room in the College dormitories. An abundant supply of plain, nourishing food, with as large variety as possible, is furnished absolutely at cost. The charge at present is \$8 per month, payable in advance, with reduction in case of withdrawal during the month.

Rooms in the College dormitories are supplied with electric lights, steam heat and all necessary furniture, except sheets, pillow-cases, bed-spreads and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal. Lodging in the College buildings will not be supplied to special students, who are permitted, however, to board in the mess-hall, if they so desire.

Any student over twenty-one years of age is permitted to room and board outside the College.

### CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections, at frequent intervals, are made by the College physician. There is an abundant supply of pure water from twelve deep wells. Each cadet has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 10 o'clock, and in cases of serious illness, as frequently as may be required.

## COURSES OF INSTRUCTION.

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The College offers the following Courses of Instruction :

**I. Full Courses** of four years, leading to degrees in:

- 1st. Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).
- 2d. Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, and Mining Engineering).
- 3d. Chemistry** (including Metallurgy and Dyeing).
- 4th. Textile Industry** or Cotton Manufacturing.

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, green-houses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The Bachelor's degree is conferred upon any one who completes a Full Course.

**II. Short Courses** of two years (not leading to a degree) in Agriculture, in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machinist's Work and Drawing), in Dyeing, and in Building and Contracting.

The Short Courses include nearly all the practical work of the Full Courses, with less theoretical instruction. They are intended for students who desire chiefly manual training or for those who are unable to complete the Full Courses.

**III. Special Courses**, requiring about three months, in Agriculture, Carpenter-work, Machine Shops, Engine-tending, Boiler-tending, Machine Drawing, Designing, and Road-building. The special courses are intended for persons of limited means, or limited opportunity, who desire special training in a single line.

**IV. Graduate Courses**, extending over two years and leading to advanced degrees. These are intended for students who have completed the Full Courses and who desire further instruction and training along special lines.

## AGRICULTURAL COURSES.

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### I. The Four Year Course in Agriculture.

#### Ia. The Two Year Course in Agriculture.

#### Ib. The Winter Course in Agriculture and Dairying.

**Aim and Scope.**—The aim of the Agricultural Courses is to train young men in both the science and the practice of their profession. It is believed that every young man preparing to farm needs a double education: one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

The four year course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domains of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of English Literature and of Political Economy as training studies, and reasonable attention to these studies is required.

The two year course is designed to meet the needs of those who are unable to take the longer course. It is especially devoted to the practical study of Agriculture and Horticulture, and their various branches, and the natural sciences which are so closely related to farming.

The ten weeks' winter course in Agriculture is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention.

The ten weeks' dairy course is a course in practical butter-making in accordance with the most approved methods of the modern creamery.

**Methods of Instruction.**—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are almost constantly assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Department of Agriculture is fitting up laboratories for investigation in Soil Physics and in the mechanical analysis of soils. The dairy department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices upon yield and upon fertility, in varieties of fruit, of vegetables, and of forage crops. The methods employed and the results obtained are freely used for instruction.

In work other than purely technical the agricultural students meet the same instructors and enjoy the same privileges as other students of the College. In all departments the laboratory method is freely employed. The student uses apparatus with his own hands and consults the literature of the subject at every step.

**Scholarships in Agriculture.**—One hundred and twenty scholarships have been established by the Board of Agriculture for students in the four year and the two year courses in Agriculture. These scholarships cover tuition (and room rent in the College dormitories if the College can furnish rooms), and are available for the time the student is in college.

**Self-support while a Student.**—The Board of Agriculture, in the interest of young men who are unable to meet necessary college expenses, has appropriated \$2,000 annually for student labor. This generosity on the part of the Board enables every student to pay a good part of his college expenses; some are able to meet the entire expense this way. This sum appropriated is intended solely to pay for farm work. The work is precisely the sort of work that is done on the farm—plowing, hauling, tile-laying, feeding beef cattle, feeding dairy cattle, feeding and grooming horses, running ditches and terraces, repairing machinery and tools, harvesting crops, the care of hogs, poultry, etc.

This feature in the courses of agriculture is helpful not only in defraying college expenses, but serves as a training and education as well.

**Requisites for Admission.**—Applicants for admission to the four year course in Agriculture must be at least sixteen years of age, and are examined in the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, and American History.

For the two year course in Agriculture no entrance examinations are required if the applicant is at least twenty years old. Applicants not twenty years old desiring to enter the two year course will stand an examination in Arithmetic (through decimal fractions), English Grammar and Composition, and American History.

For the winter courses in Agriculture and Dairying no entrance examination is required, but applicants must be over eighteen years of age.

**I. Four Year Course in Agriculture,** leading to the Degree of Bachelor of Agriculture.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.*		
	1st Term.	2d Term.	3d Term.
Botany, Elementary, 28†-----	3	3	--
“ Systematic, 29 -----	--	--	3
Zoology, 35 -----	3	--	3
“ (Entomology), 37 -----	--	3	--
Elementary Horticulture, 23 -----	4	--	--
Pomology, 24 -----	--	--	4
Dairying, 14 -----	--	4	--
Algebra, 55 -----	4	4	--
Geometry, 56-----	--	--	4
English, 58-----	3	3	3
Military Drill, 65-----	8	3	3

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

\*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods two hours.

Sophomore Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock and Stock-judging, 1	3	--	--
Principles of Breeding and Stock-judging, 2	--	3	--
Stock-feeding, 3 -----	--	--	3
Plant Diseases, 30 -----	3	--	--
Human Physiology, 36-----	--	3	--
Physiological Botany, 31-----	--	--	3
Inorganic Chemistry, 39 -----	3	3	3
Inorganic Chemistry (laboratory), 40-----	2	2	2
Physics, 47-----	2	2	2
Free-hand Drawing, 48 -----	2	--	--
Mechanical and Agricultural Drawing, 49-	--	2	2
English, 59 and 61 -----	2	2	2
Military Drill, 65-----	3	3	3

Junior Year.

Farm Equipment, 4 -----	4	--	--
Soils, 5-----	--	4	--
Farm Crops, 6-----	--	--	4
Veterinary Anatomy, 19-----	4	--	--
Veterinary Medicine, 20-----	--	4	--
Veterinary Practice, 21-----	--	--	4
Agricultural Chemistry, 45-----	2	2	2
Analytical Chemistry (laboratory), 43-----	2	2	2
Wood-work, 50-----	1	1	--
Forge-work, 51-----	1	1	--
Mechanical Technology, 52 -----	1	1	--
Farm Machinery, 7-----	--	--	3
English and History, 62 and 63 -----	2	2	2
Military Tactics, 66-----	1	1	1
Military Drill, 65-----	3	3	3



## Senior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
History of Agriculture, 18-----	--	--	3
Bacteriology, 33-----	3	3	--
English, 60 and 62-----	2	2	2
Political Economy, 64-----	2	2	2
Military Drill, 65-----	3	3	3
Elect ten hours of the following:			
Animal Husbandry (horses), 8-----	2	--	--
Animal Husbandry (cattle), 9-----	--	2	--
Animal Husbandry (sheep and swine), 10-----	--	--	2
Agronomy, 11-----	3	--	--
Special Crops, 12-----	--	3	--
Soil Physics and Soil Management, 13-----	--	--	3
Dairy Bacteriology, 15-----	3	--	--
Experimental Dairying, 16-----	--	3	--
Dairy Seminary, 17-----	--	--	3
Veterinary Medicine, 22-----	3	3	3
Market Gardening, 25-----	3	--	--
Forestry, 26-----	--	3	--
Landscape Gardening, 27-----	--	--	3
Plant Diseases (advanced), 34-----	2	--	--
Entomology (advanced), 38-----	--	2	--
Economic Botany, 32-----	--	--	2
Organic Chemistry, 41-----	2	2	2
Analytical Methods, 42-----	1	1	1
Agricultural Chemical Analysis (lab'y), 44-----	4	4	4

## Ia. The Two Year Course in Agriculture.

## First Year.

Botany, Elementary, 28-----	3	3	--
"    Systematic, 29-----	--	--	3
Elementary Horticulture, 23-----	4	--	--
Pomology, 24-----	--	--	4
Dairying, 14-----	--	4	--
Elementary Agricultural Chemistry, 46-----	2	2	2
Arithmetic, 53-----	5	--	--
Algebra, 54-----	--	5	5
English, 57-----	3	3	3
Military Drill, 65-----	3	3	3



Second Year.

Elect seventeen hours from the following :

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock and Stock-judging, 1	3	--	--
Principles of Breeding and Stock-judging, 2	--	3	--
Stock-feeding, 3	--	--	3
Farm Equipment, 4	4	--	--
Soils, 5	--	4	--
Farm Crops, 6	--	--	4
Veterinary Anatomy, 19	4	--	--
Veterinary Medicine, 20	--	4	--
Veterinary Practice, 21	--	--	4
Market Gardening, 25	3	--	--
Forestry, 26	--	3	--
Landscape Gardening, 27	--	--	3
Plant Diseases, 30	3	--	--
Human Physiology, 36	--	3	--
Physiological Botany, 31	--	--	3
Zoology, 35	3	--	3
Zoology (Entomology), 37	--	3	--
Inorganic Chemistry, 39	3	3	3
Inorganic Chemistry (laboratory), 40	2	2	2
Wood-work, 50	1	1	--
Forge-work, 51	1	1	--
Mechanical Technology, 52	1	1	--
Farm Machinery, 7	--	--	3
Military Drill, 65	3	3	3

WINTER COURSES IN AGRICULTURE AND DAIRYING.

**General Statement.**—The Winter Course in Dairying and the Winter Course in Agriculture are designed to meet the wants of young men who are ambitious to excel in their chosen vocation of farming and who feel the need of more and better preparation before taking up their life work. The subjects presented in the two courses are those about which every young farmer should have definite and clear knowledge. In their treatment the topics are handled in such a way as to make the information to the student useful in the highest possible degree.

There is no longer any question concerning the value of advanced, definite knowledge concerning agriculture to those who follow farming; education and training pay on the farm as they do elsewhere in life.

The expenses of the course are so little, and the good to be derived so great, no young man in North Carolina can afford to miss the opportunity of getting this training so necessary in his work. The money necessary to meet the expenses for a whole term's instruction can be earned in a month or two before attending. Therefore no young man, even though he possesses but a few dollars, can afford to miss the opportunity for training in his work.

The studies offered are dairying, stock-raising, creamery practice, stock-feeding, diseases of farm animals, dairy-farming, breeding farm animals, entomology, dairy chemistry, farm economics, and book-keeping. The class-room work is supplemented by practice in the creamery, barn, greenhouse, and work shop.

**Equipment.**—The work in dairying which includes butter-making, milk-testing, handling cream separators, pasteurizing cream and milk, and dairy bacteriology, is given in the Dairy building. The building is equipped with separators, milk-testers, pasteurizer, and all tools required in making butter and preparing milk or cream for the city markets.

**Requirements for Admission.**—No entrance examination is required, but the students taking either the Dairy or Winter Course must be at least eighteen years of age and should have a common school education.

**Expenses—College Dues.**—Each student is required to pay a laboratory fee of five dollars. Tuition and instruction are entirely free.

**Other Expenses.**—Books and note-paper will cost from two to three dollars, and two white duck suits to wear in the dairy laboratory will cost one dollar each. The suits however are not required. Board and room may be secured for \$2.50 per week. The total expenses of the whole ten weeks need not exceed thirty dollars.

### **Ib. The Winter Course in Agriculture and Dairying.**

**Butter-making.**—This course includes all practical operations of creamery management. The student works with the guidance and under the direction of the Instructor at the same operations of butter-making, or pasteurizing, or milk-testing until proficiency is obtained. He is required to follow the milk from the time it enters the laboratory and creamery until the product leaves it, and to determine the points in processes where losses occur and reasons why they occur. Six periods. Mr. KENDALL.

**Milk and Butter Production.**—This course consists of lectures and recitations on the methods of taking care of milk and the manu-

facturing of it into other products. Also lectures upon construction, equipment and operation of creameries, dairies and milk depots. Each student is required to draw a plan of a farm dairy and prepare an estimate for equipment of same. Two periods. Professor BURKETT and Mr. KENDALL.

**Farm Chemistry.**—The course is planned to give the student a brief outline of the composition of the soil, composts, and fertilizers in their relation to plant growth; the composition of the plant and the changes brought about in various methods of curing; the composition of milk and its products, etc. The lectures will be illustrated as far as practicable by experiments. Two periods. Professor WITHERS.

**Dairy Farming.**—Lectures are given under this subject upon the history, adaption, care, and management of the different breeds of dairy cattle. Dairy animals are studied by the score card, in accordance with the practice of judging animals for dairy purposes.

Instruction will also be given upon the character of food-stuffs, the relation of food to the animal, and kind and quality of food for the best milk production. Two periods. Professor BURKETT.

**Bacteriology.**—The course in bacteriology will consist of lectures and laboratory work, treating of the economy of bacteria in farm operation, their work in the manufacture of butter and cheese, and in the manufacture of manures, wines, vinegar, etc. Special consideration is given to the diseases of butter and milk.

Practical instruction will be given in sterilizing and pasteurizing cream and milk, also in making use of cultures or "starters" for ripening cream. Two periods. Dr. STEVENS.

**Winter Gardening.**—This course covers the growing, handling and marketing of crops suitable for winter forcing under glass. The College greenhouse will be used for practical demonstration. Besides forcing of vegetables, greenhouse construction, types and forms of houses, different methods of heating, cost of forcing houses, soils, fertilizers, composts, subirrigation, ventilation and shading, forcing crops by the use of electric light, pollination, as well as combating insects and diseases, will be taught and illustrated as far as practicable. Two periods. Mr. RHODES.

**Disease of Cattle.**—The lectures of this subject consist of the anatomy of the cow, with special reference to digestion, reproduction and milk producing organs, and the more common non-infective diseases and their treatment. Four periods. Professor BUTLER.

**Entomology.**—This is a short course in which the more important noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Two periods. Mr. SHERMAN.

**Feeds and Feeding and Stock-raising.**—This subject consists of an elementary study of the composition of foods; the constituents of feeding, amount, combination and form necessary to give best results with various kinds of live stock.

The student is required to calculate digestibilities and nutritive ratios and to arrange therefrom proper feeding rations. Two periods. Professor BURKETT.

**Book-keeping.**—This subject consists of the practical study of farm accounts, supplemented by numerous original examples and sets of practice. One period. Professor HILL.

**Farm Economics.**—This is an elementary course, dealing with production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. One period. President WINSTON.

## AGRICULTURE.

### Equipment.

The College possesses the following equipment for instruction in Agriculture: The farm includes six hundred acres, with one hundred and fifty acres under cultivation; a large basement barn, 50 by 72 feet, three stories. The first floor is occupied by farm implements and machinery; second story is occupied by horses, grain bins, cutting implements, etc.; third story, by hay, which is elevated by a Ricker and Montgomery hay carrier. Just outside the barn are two 70-ton silos. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an eight-horse power Skinner engine. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The Dairy Building contains three rooms and cellar, and is supplied with DeLaval, Sharpless, United States, and Reid Separators, Babcock Testers, various kinds and makes of churns, butter-workers, etc.

The live stock consists of necessary horses and mules, a herd of dairy cattle, also a herd of twenty young Aberdeen-Angus beef cattle. Poland-China and Berkshire swine are bred pure, and from high-class specimens, from which breeding-stock is sold as a part of the farm products.

The Poultry-yard is divided into sixteen lots. The buildings consist of incubator cellar, brooder-house, and hen-houses. Several different incubators are used. The Poultry-yards contain the following breeds: White Wyandotte, White and Barred Plymouth Rock, Black Minorca, Brown Leghorn, Light Brahmas, and Pekin Ducks.

### Subjects of Instruction.

**1. Breeds of Live Stock.**—Lectures and recitations upon the history, characteristics, care and management, and adaption of the different breeds of live stock. Practical exercises are given in scoring and judging the various kinds of live stock with the score card. Three periods, first term. For Sophomores and second-year students. Professor BURKETT.

**2. Principles of Breeding.**—Lectures and recitations upon the laws of inheritance, and the principles and phenomena of evolution as applicable to the improvement of animals or plants. The aim is to bring every known principle of reproduction to the assistance of the breeder's art.

Practical exercise in scoring and judging live stock, and in writing and tracing pedigrees. Three periods, second term. For Sophomores and second-year students. Professor BURKETT.

**3. Stock-feeding and Hygiene.**—Lectures and exercises upon the laws of nutrition, and the character of food-stuffs, and the kind and quality of foods to produce certain results. Practical exercises in calculating digestibility, nutritive ratios, and feeding standards. Three periods, third term. For Sophomores and second-year students. Professor BURKETT.

**4. Farm Equipment.**—Lectures and recitations upon selecting, planning, and equipping farms; planning and erecting farm buildings; farm vehicles and machinery; power, water, and drainage; practical exercise in drawing plans of farms and farm buildings; levelling and laying drains, dynamometer tests of wagons and farm implements, etc. Four hours first term. For Juniors and second-year students. Professor BURKETT.

**5. Soils.**—Lectures and recitations upon composition, formation, kinds, and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air, and fertilizers, and mechanical analysis. Four hours, second term. For Juniors and second-year students. Professor BURKETT.



**6. Farm Crops.**—Lectures and recitations upon the history, production, harvesting, and marketing of farm crops. Practical exercise with growing and dried specimens of farm crops, including grasses, clovers, and other forage crops. Four hours, third term. For Juniors and second-year students. Professor BURKETT.

**7. Farm Machinery.**—Lectures and laboratory work on the tools and machinery of the farm, in reference to their design, construction, draft, durability, and care. The student is required to set up and test the various machines used on the farm. Three hours, third term. For Juniors and second-year students. Professor BURKETT.

**8. Animal Husbandry.**—A critical study of the horse; his breeding and management; gaits; practice in expert judging of horses. Two periods, first term. For Seniors. Professor BURKETT.

**9. Animal Husbandry.**—A critical study of beef and dairy cattle; the breeding, feeding, and management, and practice in expert judging of cattle. Two periods, second term. For Seniors. Professor BURKETT.

**10. Animal Husbandry.**—A critical study of sheep and swine in reference to type, wool or mutton; pork or bacon. The breeding, feeding, and management of sheep and swine, and practical exercise in expert judging sheep and swine. Two periods, third term. For Seniors. Professor BURKETT.

**11. Agronomy.**—A critical study of the farm crops, corn and cotton; judging of corn; conditions of germination and growth, and improvement by selection and breeding. Three periods, first term. For Seniors. Professor BURKETT.

**12. Special Crops.**—Special crops will be studied by the student in the laboratory and field. Three periods, second term. For Seniors. Professor BURKETT.

**13. Soil Physics and Management.**—This course is designed for advanced work in the study of soils, both in the laboratory and the field. Three periods, third term. For Seniors. Professor BURKETT.

**14. Dairying.**—Practice and occasional lectures. The course consists in general management of modern dairying, the methods of milk analysis, the bacteriology of milk, the use of separators, the testing of milk, ripening of cream, churning, working, packing and scoring butter. Four periods, second term. For Freshmen. Professor BURKETT and Mr. KENDALL.

**15. Dairy Bacteriology.**—A laboratory course in the study of bacteria in its relation to creamery, butter-making, and cheese production. Three periods. For Seniors. Mr. KENDALL.

**16. Experimental Dairying.**—Laboratory practice in making butter and cheese. Three periods. For Seniors. Mr. KENDALL.

**17. Dairy Seminary.**—Laboratory practice in making butter and cheese of special commercial importance. Three periods. For Seniors. Mr. KENDALL.

**18. History of Agriculture and Rural Economics.**—Lectures upon the history of Agriculture; present agricultural methods in various counties; cost and relation, profits of various farm operators and systems. Three hours, third term. For Seniors. Professor BURKETT.

### VETERINARY SCIENCE.

The object of the teaching in this department is not to turn out educated veterinarians, but it is intended to more thoroughly equip the agricultural student for the breeding and management of live stock. In addition to the work required of all students in the Agricultural courses, as outlined below, the Senior students in the four year course in Agriculture may elect to do three hours a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the Agricultural courses.

**19. Veterinary Anatomy.**—Lectures, illustrated by charts and sketches and, when practicable, by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors and elective for second-year students in the two-year course. Professor BUTLER.

**20. Veterinary Medicine.**—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors and elective for second-year students in the two year course. Professor BUTLER.

**21. Veterinary Practice.**—Lectures on the most common diseases and injuries of domestical animals, with appropriate treatment for the same. When practicable these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and to perform minor surgical operations under the direction of the instructor. Four periods, third term. Required of Juniors and elective for second-year students in the two year course. Professor BUTLER.

**22. Veterinary Medicine.**—Advanced course in the use and action of reviewing medicines with chemical practice. Three periods. For Seniors. Professor BUTLER.



## HORTICULTURE.

### Equipment.

Twenty-three acres of land comprise the Horticultural Experiment farm. There is ample equipment of barns, silos, stock, and machinery. There are five communicating greenhouses, separated by glass partitions so that different night temperatures can be maintained to suit the various purposes to which the houses are devoted. In addition, there is one glass structure, without heat, for the culture of foreign grapes. There is kept a general collection of plants for botanical study and for practice in Floriculture, and in two of the houses winter forcing of vegetables and fruits is carried on, in order that the students may have practice in a line of work that is rapidly assuming commercial importance in the State. The building and greenhouses are heated in the most complete manner by hot water.

The entire basement of Primrose Hall is used as a Horticultural Laboratory, where practice in grafting, potting, and cross fertilization of plants is constantly going on.

### Subjects of Instruction.

**23. Elementary Horticulture.**—Massey's *Trucking in the South*. Four periods, first and third terms. Required of Freshmen and first-year students. Mr. RHODES.

**24. Pomology.**—Bailey's *Principles of Fruit Growing*. Four periods, third term. Required of Freshmen and first-year students. Mr. RHODES.

**25. Market Gardening.**—Lectures on the theory and practice of growing vegetables in open ground and under glass commercially. Three periods, first term. Elective for Seniors and second-year students. Professor MASSEY.

**26. Forestry.**—Lectures on forest influences and methods of forest management, timbers, and forest products. Three periods, second term. Elective for Seniors and second-year students. Professor MASSEY.

**27. Landscape Gardening.**—Lectures on the history of the garden art and styles of ornamental gardening, planning of country places and farm-houses, and improvement of grounds in general. Professor MASSEY.

## BIOLOGY.

### Equipment.

The biological laboratory is equipped with the books, specimens, sterilizers, microscopes, microtomes, and the small utensils needed in the prosecution of the work. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds of both weeds and cultivated plants, and most of the important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material in seed-testing and for conducting physiological experiments.

### Subjects of Instruction.

**28. Elementary Botany.**—Weekly lectures accompanied by laboratory work and reference-reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized and the broad principles of nutrition, reproduction, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The student's knowledge is made his own through field-work and independent investigation. Three periods, first and second terms. Required of Freshmen and first-year class in Agriculture. Doctor STEVENS.

**29. Systematic Botany and Ecology.**—The student becomes acquainted with the principal orders and families of plants of North Carolina as well as with the general problems of plant classification. More attention is given to the grouping of plants into societies and to the study of plant variation and adoption than to mere collecting and classifying. Three periods, third term. Required of Freshmen and first-year class in Agriculture. Doctor STEVENS.

**30. Plant Diseases.**—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores and second-year class in Agriculture. Doctor STEVENS

**31. Physiological Botany.**—Lectures, demonstrations and laboratory work treating of plant nutrition, reproduction, and growth. Especial attention is given to phases of the subject bearing most directly upon plant culture. Three hours, third term. Required of Sophomore and second-year class in Agriculture. Doctor STEVENS.

**32. Economic Botany.**—A study of the more important groups of economic plants, grasses, and forage plants, weeds, medicinal plants, fibres, and of seed-testing, nitrification, origin of cultivated plants, etc. Two hours, third term. Required of Seniors in Agriculture. Dr. STEVENS.

**33. Bacteriology.**—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Three hours, first and second terms. Required of Seniors in Agriculture. Doctor STEVENS.

**34. Plant Disease (Advanced).**—Methods of culture and investigation of Plant Disease. This course is intended to prepare the student for original investigation in plant diseases. Two hours, first term. Elective for Seniors in Agriculture. Doctor STEVENS.

**35. Zoology.**—The more fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lecture, laboratory work, and reading. Two terms are devoted to vertebrates and invertebrates exclusive of insects. This course is intended to present a general view of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Three periods, first and third terms. Required of Freshmen and second-year students in Agriculture. Doctor STEVENS.

**36. Human Physiology.**—Lectures and laboratory work, supplemented by home work and observation, cover the more important features of human physiology and hygiene. Three hours, second term. Required of Sophomore second-year class in Agriculture. Dr. STEVENS.

**37. Entomology.**—Elements of insect structure and classification. Injurious insects and remedies; *a.* Orchard insects; *b.* Insects of small fruits; *c.* of truck and garden crops; *d.* of cotton, corn, tobacco, grains, and grasses; *e.* of forest, shade, and ornamental plants; *f.* of barn, mill, and household. Three periods, second term. Required of Freshmen in Agriculture. Mr. SHERMAN.

**38. Entomology (Advanced).**—Systematic study of orders and families of insects with special reference to structure, classification, life histories, and habits. Lectures and laboratory practice. Two periods, second term. Required of Seniors in Agriculture. Mr. SHERMAN.

## CHEMISTRY.\*

**39. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated with experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor FRAPS.

**40. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. SYME.

**41. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Elective for Seniors. Mr. BIZZELL.

**42. Analytical Methods.**—A discussion of methods and principles involved in qualitative and quantitative analysis. One period. Elective for Seniors. Professor WITHERS.

**43. Analytical Chemistry (Introductory).**—Laboratory work. Caldwell's *Chemical Analysis*. The student is taught to detect the presence of the more common elements in unknown substances. He is then given practice in introductory gravimetric and volumetric quantitative work. Two periods. Required of Juniors. Mr. SYME.

**44. Agricultural Analysis.**—Laboratory work. The work of the student in quantitative analysis is continued, embracing the analysis of those substances more closely related to his work, as fertilizers, feeding-stuffs, milk, butter, etc. Four periods. Elective for Seniors. Professor WITHERS and Mr. BIZZELL.

**45. Agricultural Chemistry.**—Attention is given to the consideration of the chemistry of soils and fertilizers; the preparation of manures and composts; the air as a plant-feeder; the constituents of the plant and their functions; the composition of feeding-stuffs; the principles of feeding animals; the composition of milk and butter; the making of soap, cider, vinegar, etc. Two periods. Required of Juniors. Professor WITHERS.

**46. Agricultural Chemistry (Elementary).**—Two periods. Required of first-year students in the Short Course. Professor WITHERS.

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\* For further information see courses in Chemistry.

**PHYSICS.\***

**47. Elementary Physics.**—Properties of matter; fundamental units. British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Sophomores. Professor WEIHE.

**DRAWING.†**

**48. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Sophomores. Mr. CARTER.

**49. Elementary Mechanical Drawing.**—Use of instruments; geometric drawing; isometric drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Sophomores. Mr. CARTER.

**SHOP-WORK.‡**

**50. Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning; handling wood lathes and tools. One period, first and second terms. Required of Juniors and second-year students in the two year course. Mr. CARTER.

**51. Forge-work.**—Exercises in forging and welding; making exercises of iron; care of forge tools and fires. One period, first and second terms. For Juniors and second-year students. Mr. OLIVER CARTER.

**52. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; principles of correct methods of wood-working and forging; care of belting and shafting. One period, first and second terms. For Juniors and second-year students. Mr. CARTER.

**MATHEMATICS.‡**

**53. Arithmetic.**—Begin with decimal fractions and complete the subject. Five periods, first term. Milne's *Standard Arithmetic*. Required of first-year students. Mr. FISH and Mr. STURGILL.

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\* For full information in regard to the Department of Physics see course in Electrical Engineering.

† For full information in regard to shop-work, drawing, and other Mechanical Engineering subjects see course in Mechanical Engineering.

‡ For full information in regard to Mathematics see course in Civil Engineering.



**54. Algebra.**—Up to quadratic equations. Wells's *Higher Algebra*. Five periods, second and third terms. Required of students in first year of short course. Mr. FISH and Mr. STURGILL.

**55. Advanced Algebra.**—Wells's *Higher Algebra*. Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of all Freshmen. Mr. YATES and Mr. FISH.

**56. Geometry.**—Plane and solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of Freshmen. Mr. YATES.

### ENGLISH.

**57. English Composition.**—A drill upon the forms of the language, the correct relation of words, the sentence, and its adjustment. Daily written exercises. Three periods. Required of first-year students. Mr. OWEN.

**58. Introductory Rhetoric and Composition.**—Scott & Denney's *Composition Rhetoric* and Buehler's *Exercises* are used as texts. These are accompanied by drills on the forms of the language and methods of sentence formation. The student is taught to plan all work, and every effort is made to develop his constructive faculties. Three periods a week. Required of Freshmen. Professor HILL and Mr. OWEN.

**59. Rhetoric.**—Newcomer's *Rhetoric*. The organic parts of discourse and the essential qualities of good style are considered. Especial study is given this year to themes in narration and description. Many exercises are required. Two periods, first and second terms. Required of Sophomores. Professor HILL.

**60. Analysis and Construction of Themes in Exposition and Argumentation.**—Two periods, third term. Required of Seniors. Professor HILL.

**61. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Required of Sophomores. Professor HILL.

**62. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two hours, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

## HISTORY.

**63. English History.**—The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

## POLITICAL ECONOMY.

**64. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Seniors. Two periods. President WINSTON.

## MILITARY SCIENCE.

**65. Drill.**—Schools of the Soldier, Company, and Battalion in Close and Extended Order, Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three afternoons. Required of all classes. Commandant and officers of the Battalion.

**66. Tactics.**—Theoretical instruction in the Schools of the Soldier, Company, and Battalion in close and Extended Order; Ceremonies, etc. One period. Required of all Juniors. Captain PHELPS.



## ENGINEERING COURSES.

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### Four Year Courses in

- II. Civil Engineering,
- III. Mechanical Engineering,
- IV. Electrical Engineering,
- V. Mining Engineering.

### Two Year Courses in

- IIa. Building and Contracting,
- IIIa. Mechanic Arts.

### Special Courses in

- IIb. Road-building,
- IIIb. Carpentry,
- IIIc. Machine Shop,
- IIId. Engine and Boiler-tending,
- IIIe. Drawing.

## COURSE IN CIVIL ENGINEERING.

The aim of the Course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and drafting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in drafting. At the same time it is recognized that a successful engineer requires a well trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in Pure Mathematics and in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this preëminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

## II. The Four Year Course in Civil Engineering, leading to the Degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91-----	2	--	--
Mechanical Drawing, 92-----	--	2	2
Wood-work, 96-----	1	1	1
Forge-work, 97-----	1	1	1
Mechanical Technology, 102-----	1	1	1
Algebra, 84-----	4	4	--
Geometry, 85-----	--	--	4
Book-keeping, 90-----	1	1	1
Elementary Physics, 112-----	2	2	2
English, 132-----	3	3	3
History, 138-----	2	2	2
Military Drill, 141-----	3	3	3

### Sophomore Year.

Architecture, 80-----	2	--	--
Agricultural Drawing, 81-----	2	2	2
Geometry, 85-----	4	--	--
Trigonometry, 86-----	--	4	4
Descriptive Geometry, 71-----	--	2	2
Electricity and Magnetism, 113-----	2	2	2
Inorganic Chemistry, 127-----	3	3	3
Inorganic Chemistry (laboratory), 128-----	2	2	2
English, 133 and 135-----	2	2	2
Military Drill, 141-----	3	3	3

### Junior Year.

Surveying, 68 and 69-----	2	2	2
Surveying (field-work), 70-----	2	2	2
Construction, 77-----	2	--	--
Mechanics, 89-----	3	3	3
Drawing, 71-----	2	2	2
Graphic Statics, 67-----	--	2	2
Analytical Geometry, 87-----	4	4	--
Calculus, 88-----	--	--	4
English and History, 139 and 136-----	2	2	2
Military Tactics, 142-----	1	1	1
Military Drill, 141-----	3	3	3

## Senior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanics of Materials, 78-----	3	--	--
Construction, 77-----	--	2	2
Road-working, 79-----	--	1	1
Roofs and Bridges, 75-----	3	--	--
Bridge Design, 72-----	--	3	3
Municipal Engineering, 73-----	2	2	2
Surveying (field-work), 74-----	3	3	3
Hydraulics, 76-----	--	2	2
Calculus, 88-----	2	--	--
English, 136 and 134-----	2	2	2
Political Economy, 140-----	2	2	2
Military Drill, 141-----	3	3	3

## IIa. The Two Year Course in Building and Contracting.

## First Year.

Free-hand Drawing, 91-----	2	--	--
Mechanical Drawing, 92-----	--	2	--
Wood-work, 96-----	2	2	--
Mechanical Technology, 102-----	1	1	1
Architecture, 80-----	2	2	2
Arithmetic, 82-----	5	--	--
Algebra, 83-----	--	5	5
Geometry, 85-----	--	--	4
English, 131-----	3	3	3
History, 137-----	2	2	2
Military Drill, 141-----	3	3	3

## Second Year.

Construction-----	2	2	2
Drawing-----	2	2	2
Contracts and Specifications-----	2	--	--
Estimates and Bills of Materials-----	--	2	2
Levelling and Use of Instruments-----	--	4	4
Algebra, 84-----	4	--	--
Geometry, 85-----	4	--	--
Trigonometry, 86-----	--	4	4
Book-keeping, 90-----	1	1	1
English, 132-----	3	3	3
Military Drill, 141-----	3	3	3

**IIb. Special Course in Road-building (January to May).**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying -----	--	1	4
Road-building (including the Survey and Location, Materials, Method of Construction, Drainage, Bridges, and Machinery) -----	--	6	6
Drawing -----	--	4	4
Trigonometry -----	--	4	4

**CIVIL ENGINEERING.****Equipment.**

There is a complete equipment of all instruments necessary to civil engineering field-work.

**Subjects of Instruction.**

**67. Graphic Statics.**—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil Engineering. Professor RIDDICK.

**68. Surveying.**—Land surveying, levelling, elements of triangulation, topographical surveying, road-making. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil Engineering. Professor RIDDICK.

**69. Railroad Engineering.**—Reconnoissance, preliminary, and location surveys, cross-sections, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil Engineering. Professor RIDDICK.

**70. Surveying.**—Field-work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, levelling, railroad surveying, working up notes and platting. Two periods. Required of Juniors in Civil Engineering. Mr. FISH.

**71. Drawing.**—Descriptive Geometry, Stereotomy. Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil Engineering. Mr. FISH.

**72. Bridge Design.**—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Three periods, second and third terms. Required of Seniors in Civil Engineering. Mr. FISH.

**73. Municipal Engineering.**—Text book, lectures. Two periods, second and third terms. Required of students in Civil Engineering. Professor RIDDICK.

**74. Surveying (Field-work).**—Triangulation and topography, surveys for sewers, water-works, etc. Three periods. Required of Seniors in Civil Engineering. Mr. FISH.

**75. Roofs and Bridges.**—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges*. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Mr. FISH.

**76. Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics*. Two periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

**77. Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Two periods. Required of Seniors in Civil Engineering. Professor RIDDICK.

**78. Mechanics of Materials.**—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials*. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

**79. Road-making.**—Text-book on construction of roads, streets, and pavements. Lectures on practical road-making in North Carolina. One period, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

## ARCHITECTURE.

**80. Architecture.**—Building materials, method of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

**81. Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. STURGILL.

### MATHEMATICS.

**82. Arithmetic.**—Milne's *Standard Arithmetic*. Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students in Mechanic Arts. Mr. FISH and Mr. STURGILL.

**83. Algebra.**—Wells's *Higher Algebra*. Up to quadratic equations. Five periods, second and third terms. Required of students in first year of short course in Mechanic Arts. Mr. FISH and Mr. STURGILL.

**84. Advanced Algebra.**—Wells's *Higher Algebra*. Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of all Freshmen and second-year students in Mechanic Arts. Mr. YATES and Mr. FISH.

**85. Geometry.**—Plane and Solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of all Freshmen in full courses, and of second-year students in Mechanic Arts. Four periods, first term. Required of Sophomores. Mr. YATES.

**86. Trigonometry.**—Four periods, second and third terms. Required of Sophomores. Mr. YATES.

**87. Analytical Geometry.**—Nichols's *Analytical Geometry*. Conic sections, higher plane curves, Geometry of three dimensions. Four periods, first and second terms. Required of Juniors. Mr. YATES.

**88. Calculus.**—Osborne's *Elements of Calculus*. Differential and integral, elements of differential equations. Four periods, third term. Required of Juniors. Two periods, first term. Required of Seniors. Professor RIDDICK.

**89. Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors. Professor RIDDICK.

**90. Book-keeping.**—The work in the text-books supplemented by numerous original examples and sets for practice. One period. Required of Freshmen. Mr. YATES.

### COURSES IN MECHANICAL ENGINEERING AND MECHANIC ARTS.

The regular four-year course in Mechanical Engineering is intended to fit the student for positions of responsibility in engineering-work, and also to furnish him with a basis to carry on more advanced engineering studies.

The two-year course is offered to students who wish to become machinists, or to become competent to care for and operate engines and boilers.

Special courses in cabinet-making, boiler and engine-tending, machinists' work, or drawing, extending over a year or less, are offered to those who wish to devote a limited time to training in some particular subject, as named above.

**III. The Four Year Course in Mechanical Engineering,** leading to the degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	1	1	1
Forge-work, 97 -----	1	1	1
Mechanical Technology, 102 -----	1	1	1
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Physics, 112 -----	2	2	2
English, 132 -----	3	3	3
History, 138 -----	2	2	2
Book-keeping, 90 -----	1	1	1
Military Drill, 141 -----	3	3	3

### Sophomore Year.

Mechanical Drawing, 93 -----	2	2	2
Forge-work, 98 -----	1	--	--
Pattern-making, 99 -----	--	1	1
Mechanical Processes, 103 -----	1	1	1
Geometry, 85 -----	4	--	--
Trigonometry, 86 -----	--	4	4
Electricity and Magnetism, 113 -----	2	2	2
Inorganic Chemistry, 127 -----	3	3	3
Inorganic Chemistry (laboratory), 128 -----	2	2	2
English, 133 and 135 -----	2	2	2
Military Drill, 141 -----	3	3	3



## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Steam-engine, 104-----	2	2	2
Mechanics, 89-----	3	3	3
Machine Design, 94-----	2	2	2
Machinists' Work, 100-----	2	2	2
Analytical Geometry, 87-----	4	4	--
Calculus, 88-----	--	--	4
Dynamo Machinery, 116-----	2	2	2
English and History, 139 and 136-----	2	2	2
Military Tactics, 142-----	1	1	1
Military Drill, 141-----	3	3	3

## Senior Year.

Calculus, 88-----	2	--	--
Hydraulics, 76-----	--	2	2
English or Political Economy, 136 and 134 or 140-----	2	2	2
Mechanical Engineering (laboratory), 108-----	1	1	1
Machinists' Work, 101-----	3	3	2
Boiler and Engine Design, 95-----	4	4	4
Elementary Mechanism, 106-----	1	1	1
Industrial Chemistry, 129-----	--	--	2
Applied Mechanics, 107-----	2	2	2
Boilers and Engines, 105-----	2	2	1
Military Drill, 141-----	3	3	3

**IIIa. The Two Year Course in Mechanic Arts.****First Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	2	2	2
Forge-work, 97 -----	1	1	1
Arithmetic, 82 -----	5	--	--
Algebra, 83 -----	--	5	5
English, 131 -----	3	3	3
History, 137 -----	2	2	2
Mechanical Technology, 102 -----	1	1	1
Military Drill, 141 -----	3	3	3

**Second Year.**

Mechanical Drawing, 109 -----	3	3	3
Machinists' Work, 107 -----	3	3	3
Drawing, 109, or Machinists' Work, 101 --	4	4	4
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Mechanical Technology, 110 -----	2	2	2
Engines and Boilers, 111 -----	2	2	2
Military Drill, 141 -----	3	3	3

**SPECIAL COURSES.****IIIb. Carpentry.**

Bench and Machine Carpentry -----	12	12	12
Mechanical Drawing -----	4	4	4
Running Engines, Care Shafts and Belting	4	4	4

**IIIc. Machine Shop.**

Machinists' Work -----	12	12	12
Mechanical Drawing -----	4	4	4
Running Engines, Care Shafts and Belting	4	4	4

## IIIId. Engine and Boiler-tending.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Firing Boilers-----	8	8	8
Engine-running, Care Pumps, Shafts, and Belting-----	6	6	6
Machinists' Repair Work-----	4	4	4

## IIIe. Drawing.

Mechanical Drawing -----	12	12	12
Arithmetic S2-----	5	--	--
Algebra S3-----	--	5	--
Geometry S5-----	--	--	4

## MECHANICAL ENGINEERING.

## Equipment.

The drawing and recitation-rooms, laboratory and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are a recitation-room, engineering laboratory, machine shop, forge shop, wood-turning shop, and carpenter shop. On the second floor are the office, three drawing-rooms, and a library. In the latter various scientific and technical journals are kept on file, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required. In this way modern engineering practice is made in a measure familiar.

The laboratory is provided with the necessary apparatus for making boiler and engine tests and other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine (both of which were built by the students), a twenty-five-horse-power Woodbury engine, a large Wheeler surface condenser, connected with a  $4\frac{1}{2} \times 6 \times 6$  Blake air-pump, a large Ericsson hot-air pumping engine, apparatus for making analysis of flue gases, a hydraulic ram, a large Sturtevant fan and engine, a small water-

motor, a Worthington water-meter, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, and other apparatus for making tests.

In addition to the laboratory, there is a boiler-house equipped with three thirty-horse-power boilers, several pumps, and a jet condenser, all of which are available for experimental purposes.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch swing turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 30-inch band saw; a large jig saw; a shaper or edge moulding machine, with a very complete set of moulding cutters; a 38-inch grindstone; a wood trimmer; an adjustable mitre-box; a steam glue-heater and a large assortment of screw clamps and of bar carpenters' clamps, both iron and wooden.

The forge shop is a well lighted and ventilated room, 30 by 40 feet. There are forges enough to give twenty-eight separate fires. Each fire has its own anvil, hand tools, etc. During the past year a complete underground blast system has been installed, which furnishes blast from a Sturtevant blower to each fire. Also a complete exhaust system, operated by a 60-inch Sturtevant exhaust fan and direct connected engine, has been put in for removing all smoke, waste gases and cinders from the fires.

The machine shop contains a 16-inch swing Davis and Egan lathe with 10-foot bed, a 14-inch Winsor lathe with 3-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with 4-foot bed, a 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, a Brown and Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, a large emery tool-grinding machine. The machine tools have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by a 25-horse-power Woodbury engine. When the shops are running one of the students has charge of the engine and another of the boilers.

### Subjects of Instruction.

**91. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of all Freshmen and first-year students in Mechanic Arts. Mr. CHITTENDEN.

**92. Elementary Mechanical Drawing.**—Use of instruments, geometric drawing, isometric drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of all Freshmen and first-year students in Mechanic Arts. Mr. CHITTENDEN.

**93. Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. CHITTENDEN.

**94. Machine Design.**—Calculations and working drawings of machine parts, such as fastenings, shafting, hangers, couplings, bearings, belt and tooth gearing, pulleys, pipe and pipe couplings. Two periods. Required of Juniors in Mechanical Engineering. Professor DICK.

**95. Boiler and Engine Design.**—Calculations and working drawings of types of engines, boilers, pumps, condensers. Outline of power plant design. Four periods. Required of Seniors in Mechanical Engineering. Professor DICK.

**96. Wood-work.**—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. Handling of wood lathes and tools. One period. Required of Freshmen. Two periods. Required of first-year students in Mechanic Arts. Mr. BRAGG and Mr. CARTER.

**97. Forge-work.**—Exercises in working with iron. Welding. Uses and care of forge tools and fires. One period. Required of Freshmen and first-year students in Mechanic Arts. Mr. OLIVER CARTER.

**98. Forge-work.**—Exercises in working with steel. Tempering. Case-hardening. One period, first term. Required of Sophomores in Mechanical and Mining Engineering. Mr. OLIVER CARTER.

**99. Pattern-making.**—Exercises in making patterns of machine parts. One period, second and third terms. Required of Sophomores in Mechanical and Mining Engineering. Mr. BRAGG and Mr. CARTER.

**100. Machinists' Work.**—Bench and machine-work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming,

drilling, planing, milling, and shaper-work. Two periods. Required of Juniors in Mechanical Engineering. One period. Required of Sophomores in Electrical Engineering. Seven periods. Required of second-year students in Mechanic Arts. Mr. PARK.

**101. Machinists' Work.**—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Three periods, first and second terms; two periods, third term. Required of Seniors in Mechanical Engineering. Mr. PARK.

**102. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Care of belting and shafting. One period. Required of Freshmen and first-year students in Mechanic Arts. Mr. CARTER.

**103. Mechanical Processes.**—Description of machines used in engineering work. Methods of pattern-making, moulding, casting, and heavy forging. Description of various machine tools and methods of performing work on them; boiler-making and plate-work. One period. Required of Sophomores in Mechanical Engineering. Professor DICK.

**104. Steam-engine.**—Descriptive study of the simple steam-engine. Names and uses of the various parts of an engine. Various types of engines, fittings, foundations, and piping. Different types of boilers and settings. Arrangement of power plants. Care of engines and boilers. Two periods. Required of Juniors in Mechanical Engineering. Professor DICK.

**105. Boilers and Engines.**—Description and theory of boilers and engines, valve gears. Elementary thermodynamics. Principles involved in engine and boiler design. Two periods, first and second terms. One period, third term. Required of Seniors in Mechanical Engineering. Professor DICK.

**106. Principles of Mechanism.**—Study of the communication of motion by gear-wheels, cams, screws, belts, and link-work; automatic feed motions; epicyclic trains; parallel and quick return motions. Problems. One period. Required of Seniors in Mechanical Engineering. Professor DICK.

**107. Applied Mechanics.**—Strength of materials, structures, and machine parts; energy and transmission of power to machines. Problems, with special reference to design of machines and machine parts. Two periods. Required of Seniors in Mechanical Engineering. Professor DICK.



**108. Mechanical Engineering Laboratory.**—Practice in engine and boiler-running; valve-setting; calibration of instruments; testing gauges; lubricants. Use of indicators and calorimeters. Tests of boilers and engines. One period. Required of Seniors in Mechanical Engineering. Professor DICK.

**109. Mechanical Drawing.**—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blue-printing. Three periods. Required of second-year students. Mr. CHITTENDEN.

**110. Mechanical Technology.**—Classification and use of hand-tools and machines usually found in the pattern shop, foundry, and machine shop. Materials used and methods of carrying on work in these shops. Practical problems in estimating cost and material required to complete a piece of work; arrangements and sizes of belting, pulleys, and shafting. Two periods. Required of second-year students. Mr. CARTER.

**111. Engines and Boilers.**—Descriptive study of ordinary engines and boilers; proper methods of handling them. Care of pumps, condensers, engine and boiler fittings. Actual practice in engine-tending, boiler-firing, and dynamo-tending is also given with this course. Two periods. Required of second-year students. Professor DICK.

### COURSE IN ELECTRICAL ENGINEERING.

**Object.**—The work in this department is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior year a course in designing the various electrical machines is given.



**IV. The Four Year Course in Electrical Engineering,** leading to the degree of Bachelor of Engineering.

**Freshman Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	1	1	1
Forge-work, 97 -----	1	1	1
Mechanical Technology, 102 -----	1	1	1
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Book-keeping, 90 -----	1	1	1
Elementary Physics, 112 -----	2	2	2
English, 132 -----	3	3	3
History, 138 -----	2	2	2
Military Drill, 141 -----	3	3	3

**Sophomore Year.**

Mechanical Drawing, 93 -----	2	2	2
Geometry, 85 -----	4	--	--
Trigonometry, 86 -----	--	4	4
Inorganic Chemistry, 127 -----	3	3	3
Inorganic Chemistry (laboratory) 128 -----	2	2	2
Machinists' Work, 100 -----	1	1	1
Physical Laboratory, 114 -----	1	1	1
Electricity and Magnetism, 113 -----	2	2	2
English, 133 and 135 -----	2	2	2
Military Drill, 141 -----	3	3	3

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Dynamo Machinery, 116-----	2	2	2
Electrical Laboratory, 115-----	2	--	--
Electrical Engineering (laboratory), 120--	--	2	2
Steam-engine, 104-----	2	2	2
Mechanics, 89-----	3	3	3
Analytical Geometry, 87-----	4	4	--
Calculus, 88-----	--	--	4
Machine Design, 94-----	2	2	2
English and History, 139 and 136-----	2	2	2
Military Tactics, 142-----	1	1	1
Military Drill, 141-----	3	3	3

## Senior Year.

Alternating Currents, 117-----	3	--	--
Light and Power Plants, 118-----	--	3	--
Telephony and Telegraphy, 119-----	--	--	3
Electrical Engineering (laboratory), 121--	4	4	4
Dynamo Design, 122-----	1	2	2
Machinists' Work, 100-----	2	2	--
Mechanical Engineering (laboratory), 108--	1	--	--
Industrial Chemistry, 129-----	--	--	2
Calculus, 88-----	2	--	--
Hydraulics, 76-----	--	2	2
Political Economy, 140-----	2	2	2
Military Drill, 141-----	3	3	3
English Literature, 136 and 134-----	2	2	2

## PHYSICS.

## Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

### Subjects of Instruction.

**112. Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**113. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Sophomores. Professor WEIHE.

**114. Physical Laboratory.**—Measurements of length, area, and volume; determinations of density; laws of forces and velocities; pendulum. Two periods. Required of Sophomores in Electrical Engineering. Mr. WALTER.

**115. Electrical Laboratory.**—Electric and magnetic measurements. Two periods, first term. Required of Juniors in Electrical Engineering. Mr. WALTER.

## ELECTRICAL ENGINEERING.

### Equipment.

The electrical engineering laboratory is a small brick building 30x50. It contains the electric light plant, consisting of a 35-horse-power automatic Skinner engine, a 11.5 K. W. 110-volt Westinghouse dynamo and a 20 K. W. 2-phase 110-volt Lincoln alternator. The laboratory contains in addition to this one 6-light T. H. arc machine, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens and Halske dynamo, connected in such a way as to give 3-phase currents, one 2-horse-power 3-phase 110-volt Gen. Elect. Co. motor, one 2 K. W. 110-volt LaRoche alternator. It also contains transformers, condensers, arc lamps, circuit breakers, etc.

The department possesses a small library of standard books on all branches of physics and electrical engineering.

### Subjects of Instruction.

**116. Dynamo Machinery.**—Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Professor WEIHE.

**117. Alternating Currents of Electricity.**—Alternating current generators and motors. Static and rotary transformers. Condensers. Three periods, first term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**118. Electric Light and Power Plants.**—Storage batteries. Transmission of electric power. Three periods, second term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**119. Telephony and Telegraphy.**—Three periods, third term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**120. Electrical Engineering Laboratory.**—Standardizing of measuring instruments. Measurements of power. Characteristic curves. Two periods, second and third terms. Required of Juniors in Electrical Engineering. Mr. WALTER.

**121. Electrical Engineering Laboratory.**—Efficiency tests of direct and alternating current dynamos and motors and of transformers. Efficiency tests of electric plants. Photometry. Four periods. Required of Seniors in Electrical Engineering. Mr. WALTER.

**122. Dynamo Design.**—Design of dynamos, motors, and transformers. One period, first term; two periods, second and third terms. Required of Seniors in Electrical Engineering. Professor WEIHE and Mr. WALTER.

### COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the necessary preliminary training to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery and Steam afford the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore-dressing, metal-working, ventilation, drainage, and illumination of mines.

Students wishing to specialize in Metallurgy will please see Courses in Chemistry.

V. The Four Year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	1	1	1
Forge-work, 97 -----	1	1	1
Mechanical Technology, 102 -----	1	1	1
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Book-keeping, 90 -----	1	1	1
Physics, 112 -----	2	2	2
English, 132 -----	3	3	3
History, 138 -----	2	2	2
Military Drill, 141 -----	3	3	3

### Sophomore Year.

Mechanical Drawing, 93 -----	2	2	2
Forge-work, 98 -----	1	--	--
Pattern-making, 99 -----	--	1	1
Mechanical Processes, 103 -----	1	1	1
Geometry, 85 -----	4	--	--
Trigonometry, 86 -----	--	4	4
Electricity and Magnetism, 113 -----	2	2	2
Inorganic Chemistry, 127 -----	3	3	3
Inorganic Chemistry (laboratory), 128 ---	2	2	2
English, 133 and 135 -----	2	2	2
Military Drill, 141 -----	3	3	3

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Geology and Mineralogy, 126 -----	4	4	4
Construction, 77 -----	2	2	2
Steam-engine, 104 -----	2	2	2
Mechanics, 89 -----	3	3	3
Analytical Geometry, 87 -----	4	4	--
Calculus, 88. -----	--	--	4
English and History, 139 and 136 -----	2	2	2
Military Tactics, 142 -----	1	1	1
Military Drill, 141 -----	3	3	3

## Senior Year.

Mining, 123 -----	3	3	3
Ore Deposits, 125 -----	--	2	2
Ore Dressing, 124 -----	2	2	2
Metallurgy, 130 -----	4	4	4
Hydraulics, 76 -----	--	2	2
Surveying, 68 -----	2	--	--
Surveying (field-work), 70 -----	2	--	--
English, 136 and 134 -----	2	2	2
Political Economy, 140 -----	2	2	2
Military Drill, 141 -----	3	3	3

## MINING ENGINEERING.

**123. Mining.**—Lectures on methods of mining, including prospecting, sinking, stoping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Three periods. For Seniors in Mining Engineering.

**124. Ore Dressing.**—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Two periods. For Seniors in Mining Engineering.

**125. Ore Deposits.**—A discussion of the general features and the formation of ore bodies, followed by a description of the deposits of iron, copper, lead, zinc, silver, gold, and the lesser metals, and the occurrence of coal, petroleum, natural gas, asphalt, building stones, etc.,

with special reference to North America. Two periods, second and third terms. For Seniors in Mining Engineering.

**126. Mineralogy and Geology.**—A discussion of the elements of these subjects. Four periods. For Juniors in Mining Engineering.

### CHEMISTRY.\*

**127. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor FRAPS.

**128. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. SYME.

**129. Industrial Chemistry.**—A discussion of the materials of engineering. Two periods, third term. Required of Seniors in Mechanical and Electrical Engineering. Professor WITHERS.

**130. Metallurgy.**—A study of fuel and its uses; iron and steel, copper, lead, gold, and silver, their properties, tests; ores and details of methods of reduction. Four periods. For Seniors.

### ENGLISH.

**131. English Composition.**—A drill upon the forms of the language, the correct relation of words, the sentence and its adjustment. Daily written exercises. Three periods. Required of first-year students. Mr. OWEN.

**132. Introductory Rhetoric and Composition.**—Scott & Denney's *Composition Rhetoric* and Buehler's *Exercises* are used as texts. These are accompanied by drills on the forms of the language and methods of sentence formation. The student is taught to plan all work, and every effort is made to develop his constructive faculties. Three periods a week. Required of all Freshmen. Professor HILL and Mr. OWEN.

**133. Rhetoric.**—Newcomer's *Rhetoric*.—The organic parts of discourse and the essential qualities of good style are considered.

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\* For further information see Courses in Chemistry.



Especial study is given this year to themes in narration and description. Many exercises are required. Required of all Sophomores. Two periods, first and second terms. Professor HILL.

**134. Analysis and Construction of Themes in Exposition and Argumentation.**—Two periods, third term. Required of Seniors. Professor HILL.

**135. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Required of Sophomores. Professor HILL.

**136. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of all Seniors. Professor HILL.

## HISTORY.

**137. American History.**—By means of a text-book supplemented by lectures and frequent assignment of topics for special study, students are in this course familiarized with the leading facts in the history of the United States. Two periods. Required of first-year students. Professor PHELPS.

**138. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**139. English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

## POLITICAL ECONOMY.

**140. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Two periods. Required of Seniors. President WINSTON.

**MILITARY SCIENCE.**

**141. Drill.**—Schools of the Soldier, Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**142. Tactics.**—Theoretical instruction in the Schools of the Soldier, Company, and Battalion in close and Extended Order; Ceremonies, etc. One period. Required of all Juniors. Captain PHELPS.

## COURSES IN CHEMISTRY, DYEING, AND METALLURGY.

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- VI. The Four Year Course in Chemistry and Engineering.
- VIa. The Four Year Course in Chemistry and Dyeing.
- Vib. The Four Year Course in Chemistry and Metallurgy.

### COURSES IN CHEMISTRY.

In harmony with the general purposes for which the college was founded, the courses in chemistry are arranged to prepare young men for careers in connection with the various chemical industries either in the analytical or the operating departments. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in the applied chemical subjects bearing more directly on the course the student has selected. The fundamental principles of engineering, machinery, etc., which are almost indispensable to the successful management of chemical plants, are taught, together with the cultural studies included in the other courses.

#### Raleigh as a Chemical Centre.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesies of the owners, the students in chemistry make visits each year in company with the teaching staff of the department. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and artificial ice; for the extraction of cotton-seed oil; for the dyeing of cotton goods and for the tanning and dressing of leather.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station are located in Raleigh, and through the courtesy of these departments our students are welcomed whenever they desire to visit them.

The Berzelius Chemical Society—composed of the professional chemists residing in Raleigh and its vicinity—invites the students of this College to attend any and all meetings.

The State Museum is open to the public each day from 9 o'clock A. M. to 5 o'clock P. M. and among other things contains a very excellent collection of minerals, ores, and building stones found in the State.

### Chemical Equipment.

The laboratories of general and of analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate seventy students.

The chemical library is well supplied with reference books and chemical journals. The department owns complete sets of many of the leading chemical journals, as well as the current numbers.

### Graduates in Chemistry.

The chemical graduates of the College are engaged in the following lines of chemical work: Manufacture of illuminating gas, manufacture of sulphuric acid, manufacture of fertilizers, manufacture of tobacco products, refining and testing of oils, metallurgy of iron, metallurgy of copper, dyeing of cotton goods, in agricultural experiment stations, in State departments of agriculture, and in teaching chemistry. These are employed in North Carolina and seven other States.

On account of the extent of the subject of applied chemistry, three courses have been arranged. They are given below.

### The Four Year Course in Chemistry and Engineering.

This course is intended to fit young men for work in the various chemical industries, excepting metallurgy and dyeing, for which separate courses are provided. These include such lines of work as the manufacture of sulphuric acid, fertilizers, illuminating gas, soaps, leather, paper, glass, and the heavy chemicals; the extraction and refining of oils; the ceramic industries, etc. The student is also trained in the principles and practice of technical analysis, after laying a good foundation in the pure science. The instruction in the engineering subjects is almost indispensable to the successful conduct of a manufacturing plant and the culture studies to success in any line of work.

**VI. The Four Year Course in Chemistry and Engineering,**  
leading to the Degree of Bachelor of Engineering.

**Freshman Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 165-----	2	--	--
Mechanical Drawing, 166-----	--	2	2
Wood-work, 168-----	1	1	1
Forge-work, 169-----	1	1	1
Mechanical Technology, 171-----	1	1	1
Algebra, 177-----	4	4	--
Geometry, 178-----	--	--	4
Book-keeping, 183-----	1	1	1
English, 184-----	3	3	3
History, 189-----	2	2	2
Physics, 159-----	2	2	2
Military Drill, 192-----	3	3	3

**Sophomore Year.**

Inorganic Chemistry, 143-----	3	3	3
Inorganic Chemistry (laboratory), 144-----	2	2	2
Electricity and Magnetism, 160-----	2	2	2
Physical Laboratory, 161-----	1	1	1
Mechanical Drawing, 167-----	2	2	2
Machinists' Work, 170-----	1	1	1
Geometry, 178-----	4	--	--
Trigonometry, 179-----	--	4	4
English, 185 and 187-----	2	2	2
Military Drill, 192-----	3	3	3

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 145-----	2	2	2
Analytical Methods, 147-----	1	1	1
Analytical Chemistry (laboratory) 148----	2	2	2
Dynamo Machinery, 163-----	2	2	2
Electrical Laboratory, 162-----	2	--	--
Electrical Engineering Laboratory, 164----	--	2	2
Steam-engine, 172-----	2	2	2
Analytical Geometry, 180-----	4	4	--
Calculus, 181-----	--	--	4
English and History, 190 and 188-----	2	2	2
Military Tactics, 193-----	1	1	1
Military Drill, 194-----	3	3	3

## Senior Year.

Industrial Chemistry, 151 and 152-----	2	2	2
Technical Chemical Analysis, 149-----	4	4	4
Organic Chemistry (laboratory), 146-----	3	3	3
Mechanics, 182-----	3	3	3
Mechanical Engineering Laboratory, 173----	1	1	1
English, 188 and 186-----	2	2	2
Political Economy, 191-----	2	2	2
Military Drill, 192-----	3	3	3

## The Four Year Course in Chemistry and Dyeing.

The primary object of the Course in Dyeing is to educate boys who intend to become dyers in cotton mills, or other establishments. The course of study involves thorough grounding in English, history, mathematics, physics, and chemistry, with training in drawing and in the use of tools. Then come the more specialized courses; in dyeing, which involves the practical and theoretical study of dyes and mordants, their uses, applications, and methods of testing them, with dye-house work; the study of industrial chemistry and of technical analysis, which includes the analysis of the substances most important to dyers; and the study of the production of power by steam and electricity.

In the work in dyeing and in chemistry, particular emphasis is laid upon the work which the student does with his own hands in laboratory and dye-house. He handles and tests dyes, yarns, and fabrics, and becomes familiar with them through the work he does on them.

**VIa. The Four Year Course in Chemistry and Dyeing, leading to the degree of Bachelor of Engineering.**

**Freshman Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 165 -----	2	--	--
Mechanical Drawing, 166 -----	--	2	2
Wood-work, 168 -----	1	1	1
Forge-work, 169 -----	1	1	1
Mechanical Technology, 171 -----	1	1	1
Algebra, 177 -----	4	4	--
Geometry, 178 -----	--	--	4
Book-keeping, 183 -----	1	1	1
Physics, 159 -----	2	2	2
English, 184 -----	3	3	3
History, 189 -----	2	2	2
Military Drill, 192 -----	3	3	3

**Sophomore Year.**

Inorganic Chemistry, 143 -----	3	3	3
Inorganic Chemistry (laboratory), 144 -----	2	2	2
Electricity and Magnetism, 160 -----	2	2	2
Physical Laboratory, 161 -----	1	1	1
Carding and Spinning, 158 -----	1	1	1
Mechanical Drawing, 167 -----	2	2	2
Geometry, 178 -----	4	--	--
Trigonometry, 179 -----	--	4	4
English, 185 and 187 -----	2	2	2
Military Drill, 192 -----	3	3	3



## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Textile Chemistry and Dyeing, 153-----	2	2	2
Textile Chemistry and Dyeing (lab'y), 154-----	2	2	2
Organic Chemistry, 145-----	2	2	2
Analytical Methods, 147-----	1	1	1
Analytical Chemistry, (laboratory), 148---	2	2	2
Dynamo Machinery, 163-----	2	2	2
Electrical Laboratory, 162-----	2	--	--
Electrical Engineering Laboratory, 164---	--	2	2
Steam-engine, 172-----	2	2	2
English and History, 190 and 188-----	2	2	2
Military Tactics, 193-----	1	1	1
Military Drill, 192-----	3	3	3

## Senior Year.

Dyeing, 156-----	2	2	2
Dyeing Laboratory, 157-----	3	3	3
Chemistry of Dye-stuffs, 155-----	2	2	2
Industrial Chemistry, 151 and 152-----	2	2	2
Technical Chemical Analysis, 149-----	4	4	4
English, 188 and 186-----	2	2	2
Political Economy, 191-----	2	2	2
Military Drill, 192-----	3	3	3

**Vib. The Four Year Course in Chemistry and Metallurgy,**  
leading to the degree of Bachelor of Engineering.

**Freshman Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 165 -----	2	--	--
Mechanical Drawing, 166 -----	--	2	2
Wood-work, 168 -----	1	1	1
Forge-work, 169 -----	1	1	1
Mechanical Technology, 171 -----	1	1	1
Algebra, 177 -----	4	4	--
Geometry, 178 -----	--	--	4
Book-keeping, 183 -----	1	1	1
Physics, 159 -----	2	2	2
English, 184 -----	3	3	3
History, 189 -----	2	2	2
Military Drill, 192 -----	3	3	3

**Sophomore Year.**

Inorganic Chemistry, 143 -----	3	3	3
Inorganic Chemistry (laboratory), 144 -----	2	2	2
Electricity and Magnetism, 160 -----	2	2	2
Physical Laboratory, 161 -----	1	1	1
Mechanical Drawing, 167 -----	2	2	2
Machinists' Work, 170 -----	1	1	1
Geometry, 178 -----	4	--	--
Trigonometry, 179 -----	--	4	4
English, 185 and 187 -----	2	2	2
Military Drill, 192 -----	3	3	3

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Geology and Mineralogy, 175 -----	4	4	4
Analytical Methods, 147 -----	1	1	1
Analytical Chemistry (laboratory), 148 ---	2	2	2
Organic Chemistry, 145 -----	2	2	2
Dynamo Machinery, 163 -----	2	2	2
Electrical Laboratory, 162 -----	2	--	--
Electrical Engineering Laboratory, 164 ---	--	2	2
Steam-engine, 172 -----	2	2	2
English and History, 190 and 188 -----	2	2	2
Military Tactics, 193 -----	1	1	1
Military Drill, 192 -----	3	3	3

## Senior Year.

Metallurgy, 176 -----	4	4	4
Ore-dressing, 174 -----	2	2	2
Assaying, 150 -----	1	1	1
Technical Chemical Analysis, 149 -----	4	4	4
Industrial Chemistry, 151 and 152 -----	2	2	2
English, 188 and 186 -----	2	2	2
Political Economy, 191 -----	2	2	2
Military Drill, 192 -----	3	3	3

## CHEMISTRY.

**143. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor FRAPS.

**144. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and

\*For Agricultural Chemistry see Agricultural Courses in Department of Chemistry.

the conclusions drawn from them. Two periods. Required of Sophomores. Mr. SYME.

**145. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Elective for Seniors. Mr. BIZZELL.

**146. Organic Chemistry.**—Laboratory work. Orndorff's *Laboratory Manual*, supplemented by reference books. This work is designed to familiarize the student with the more important organic compounds and with the processes involved in their preparation. Three periods. Required of Seniors in the course in Chemistry and Engineering. Doctor FRAPS.

**147. Analytical Methods.**—A discussion of methods and principles involved in qualitative and quantitative analysis. One period. Required of Juniors. Professor WITHERS.

**148. Analytical Chemistry (Introductory).**—Laboratory work. Caldwell's *Chemical Analysis*. The student is taught to detect the presence of the more common elements in unknown substances. He is given practice in introductory gravimetric and volumetric quantitative work. Two periods. Required of Juniors. Mr. SYME.

**149. Technical Analysis.**—Laboratory work. The work of the student is continued in quantitative analysis, special attention being given to the analysis of those substances most closely connected with the course of the student. Four periods. Required of Seniors. Professor WITHERS and Mr. BIZZELL.

**150. Assaying.**—Practice work in the assaying of gold, silver, and lead ores by furnace methods. Two periods. For Seniors in Metallurgy.

**151. Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry*. A discussion of the processes and principles involved in the more important chemical industries. Two periods, first and second terms. Required of Seniors. Professor WITHERS.

**152. Industrial Chemistry.**—A discussion of the materials of engineering. Two periods, third term. Required of Seniors. Professor WITHERS.

### DYEING.\*

**153. Textile Chemistry and Dyeing.**—Lectures. A study of the chemistry of the textile fibers, and the principles involved in bleaching, dyeing, and printing. The student becomes acquainted with the

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\*For further information see outline of Textile Courses.

methods and machinery for dyeing cotton, wool, silk, and mixed goods, and learns the most important dyes now in use. Two periods. Required of Juniors. Doctor FRAPS.

**154. Textile Chemistry and Dyeing.**—Laboratory work. The experiments are designed to accompany Course 153. Working with small skeins of yarns, the student learns different methods of dyeing, applies a number of dyes, tests their fastness to washing, and other agencies, and applies other tests. All dyed skeins and fastness tests are entered in suitable scrap-books. Two periods. Required of Juniors. Doctor FRAPS.

**155. Chemistry of Dye-stuffs.**—Nietzski's *Chemistry of the Organic Dye-stuffs*. A study of the chemical composition of dye-stuffs, and the processes involved in their manufacture. Two periods. Required of Seniors.

**156. Dyeing.**—Lectures. A further study of the properties and modes of application of dye-stuffs and mordants, especially those applied to cotton. Detailed study is made of certain important methods of dyeing cotton, as indigo, turkey red, aniline black, etc. Two periods. Required of Seniors.

**157. Dyeing Laboratory.**—Involves the bleaching and dyeing of cotton in the dye-house, dyeing to a given shade, mixing of dyes, and practical dyeing tests. The student learns how to study a new dye and devise methods for its practical application. Three periods. Required of Seniors.

### CARDING AND SPINNING.\*

**158. Carding and Spinning.**—Introductory work aimed to give the student an introduction to the machines and methods of operating. One period. For Sophomores in Dyeing. Professor WILSON.

### PHYSICS.†

**159. Elementary Physics.**—Properties of matter; fundamental units. British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**160. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Freshmen. Professor WEIHE.

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\*For further information see outline of Textile Courses.

†For full information see Course in Electrical Engineering.

**161. Physical Laboratory.**—Measurements of length, area, and volume; determinations of density; laws of forces and velocities; pendulum. One period. Required of Sophomores. Mr. WALTER.

**162. Electrical Laboratory.**—Electric and magnetic measurements. Two periods, first term. Required of Juniors. Mr. WALTER.

### ELECTRICAL ENGINEERING.\*

**163. Dynamo Machinery.**—Practical units. Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two periods. Required of Juniors. Professor WEIHE and Mr. WALTER.

**164. Electrical Engineering Laboratory.**—Standardizing of measuring instruments. Measurements of power. Characteristic curves. Two periods, second and third terms. Required of Juniors. Mr. WALTER.

### MECHANICAL ENGINEERING.†

**165. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. CHITTENDEN.

**166. Elementary Mechanical Drawing.**—Use of instruments, geometric drawing, isometric drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Freshmen and first-year students. Mr. CHITTENDEN.

**167. Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores. Mr. CHITTENDEN.

**168. Wood-work.**—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. Handling of wood lathes and tools. One period. Required of Freshmen. Mr. BRAGG and Mr. CARTER.

**169. Forge-work.**—Exercises in working with iron. Welding. Uses and care of forge tools and fires. One period. Required of Freshmen. Mr. OLIVER CARTER.

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\* For full information see Course in Electrical Engineering.

† For full information see Course in Mechanical Engineering.



**170. Machinists' Work.**—Bench and machine work: exercises in chipping and filing; exercises in lathe-work; boring, reaming, drilling, planing, milling, and shaper work. One period. Required of Sophomores in Industrial Chemistry and Metallurgy. Mr. PARK.

**171. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; principles of correct methods of wood-working and forging; care of belting and shafting. One period. Required of Freshmen. Mr. CARTER.

**172. Steam-engine.**—Descriptive study of the simple steam-engine; names and use of the various parts of an engine; various types of engines and fittings, foundations, and piping; different types of boilers and settings; arrangement of power plants; care of engines and boilers. Two periods. Required of Juniors. Professor DICK.

**173. Mechanical Engineering Laboratory.**—Practice in engine and boiler-running; valve-setting; calibration of instruments; testing gauges and lubricants; use of indicators and calorimeters; tests of boilers and engines. One period. Required of Seniors in Chemistry and Engineering. Professor DICK.

### MINING ENGINEERING.

**174. Ore-dressing.**—Furnishing products for metallurgical treatment. Lectures on concentrating machinery, and the concentrating and crushing of ores by mechanical processes. Two periods. For Seniors in Metallurgy.

**175. Mineralogy and Geology.**—A discussion of the elements of these subjects. Four periods. For Juniors in Metallurgy.

**176. Metallurgy.**—Fuel and its uses, iron and steel, copper, lead, gold, and silver, their properties, tests, use and details of the methods of reduction. Four periods. For Seniors in Metallurgy.

### MATHEMATICS.

**177. Advanced Algebra.**—Wells's *Higher Algebra*. Begins at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of all Freshmen.

**178. Geometry.**—Plane and Solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of all Freshmen in full courses, and of second-year students in Short Courses in Mechanic Arts. Four periods, first term. Required of all Sophomores. Mr. YATES.



**179. Trigonometry.**—Four periods, second and third terms. Required of Sophomores. Mr. YATES.

**180. Analytical Geometry.**—Nichols's *Analytical Geometry*. Conic sections, higher plane curves, Geometry of three dimensions. Four periods, first and second terms. Required of Juniors in Industrial Chemistry. Mr. YATES.

**181. Calculus.**—Osborne's *Elements of Calculus*. Differential and integral, elements of differential equations. Four periods, third term. Required of Juniors in Industrial Chemistry. Professor RIDDICK.

**182. Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Seniors in Industrial Chemistry. Professor RIDDICK.

**183. Book-keeping.**—The work in the text-books supplemented by numerous original examples and sets for practice. One period. Required of all Freshmen. Mr. YATES.

### ENGLISH.

**184. Introductory Rhetoric and Composition.**—Scott & Denney's *Composition Rhetoric* and Buehler's *Exercises* are used as texts. These are accompanied by drills on the forms of the language and methods of sentence formation. The student is taught to plan all work, and every effort is made to develop his constructive faculties. Three periods. Required of all Freshmen. Professor HILL and Mr. OWEN.

**185. Rhetoric.**—Newcomer's *Rhetoric*. The organic parts of discourse and the essential qualities of good style are considered. Especial study is given this year to themes in narration and description. Many exercises are required. Two periods, first and second terms. Required of all Sophomores. Professor HILL.

**186. Analysis and Construction of Themes in Exposition and Argumentation.**—Two periods, third term. Required of Seniors. Professor HILL.

**187. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Required of Sophomores. Professor HILL.

**188. English Literature.**—The development of English Literature through its great periods and through its representative men. Much

parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

### HISTORY.

**189. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**190. English History.**—The first term of the Junior year is devoted to the study of English History. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

### POLITICAL ECONOMY.

**191. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Seniors. Two periods. President WINSTON.

### MILITARY SCIENCE.

**192. Drill.**—Schools of the Soldier, Company, and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**193. Tactics.**—Theoretical instruction in the Schools of the Soldier, Company and Battalion in Close and Extended Order; Ceremonies, etc. One period. Required of all Juniors. Captain PHELPS.

## TEXTILE COURSES.

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- VII. The Four Year Course in Textile Industry.
- VIIa. The Two Year Course in Textile Industry.
- VIIb. The Two Year Course in Dyeing.

### THE COURSES IN TEXTILE INDUSTRY.

The Department of Textile Industry is located in the new building completed during the present session for its use. The work of instruction carried on there is a combination of practice and theory in the manufacture of various grades of cotton goods, such as yarns, plain and fancy cloths. The student is taught to perform all the operations in connection with the manufacture of these goods, from the bale of cotton to the finished cloth. He learns how to operate the different machines and how to change them so as to produce the desired results. Instruction is also given in some of the larger problems connected with the industry. The building is fitted up like a small cotton mill and the work is conducted according to the practical methods in use there. The object of all the instruction is to prepare the student for a useful career in the cotton manufacturing industry. Some of the graduates are overseers, some are dyers, while others are superintendents of cotton mills, the position which each has attained depending upon his ability to deal with manufacturing problems.

In this department two courses of instruction are offered, the Full Course, leading to the degree of Bachelor of Engineering, and the Short Course. The Full Course covers a period of four years and combines with the textile instruction certain practical and theoretical subjects which enable the student to understand better his special work. The textile instruction begins in the Sophomore year and is the principal work of the Junior and Senior years. The Short Course is offered to those mature students who cannot spend the time required for the Full Course. To be successful the student should have had a good preparation in his early studies, especially in mathematics, and some practical experience. To enter this course the student is required to pass the full entrance examinations for the Freshman Class in College and must satisfy the professor in charge of his ability to go on with the work. Combined with the textile instruction are certain practical subjects which aim to increase the skill of the student.

In addition to the instruction given in the Textile Building, the courses in physics and chemistry, with the well equipped laboratories of these departments, in mechanical engineering subjects, with the shops and drawing-rooms in the Mechanical Building, in Mathematics and English, are all open to students in Textile Industry.

Some small tools are needed to perform the work in this department, also supplies for designing, consisting of paper, paint and brushes. The student will obtain these in the Textile Building. To cover the cost of same, a deposit of \$5 is required. Any part of this remaining over at the end of the year is returned.

**VII. The Four Year Course in Textile Industry, leading to the degree of Bachelor of Engineering.**

**Freshman Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 206 -----	2	--	--
Mechanical Drawing, 207 -----	--	2	2
Wood work, 209 -----	1	1	1
Forge-work, 210 -----	1	1	1
Mechanical Technology, 214 -----	1	1	1
Algebra, 220 -----	4	4	--
Geometry, 221 -----	--	--	4
Book-keeping, 223 -----	1	1	1
Elementary Physics, 217 -----	2	2	2
English, 224 -----	3	3	3
History, 229 -----	2	2	2
Military Drill, 232 -----	3	3	3

**Sophomore Year.**

Carding and Spinning, 194 -----	1	1	1
Mechanical Drawing, 208 -----	2	2	2
Elementary Machinists' Work, 213 -----	1	1	1
Electricity and Magnetism, 218 -----	2	2	2
Geometry, 221 -----	4	--	--
Trigonometry, 222 -----	--	4	4
Inorganic Chemistry, 201 -----	3	3	3
Inorganic Chemistry (laboratory), 202 -----	2	2	2
English, 225 and 227 -----	2	2	2
Military Drill, 232 -----	3	3	3

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 194-----	3½	3½	3½
Weaving, 195-----	3½	3½	3½
Textile Designing, 196-----	2	2	2
Textile Chemistry and Dyeing, 197-----	2	2	2
Textile Chemistry and Dyeing (lab'y), 198,	2	2	2
Dynamo Machinery, 219-----	2	2	2
English and History, 230 and 228-----	2	2	2
Military Tactics, 233-----	1	1	1
Military Drill, 232-----	3	3	3

## Senior Year.

Carding and Spinning, 194-----	4	4	4
Weaving, 195-----	4	4	4
Textile Designing, 196-----	3	3	3
Steam-engine, 216-----	2	2	2
English, 228 and 226-----	2	2	2
Political Economy, 231-----	2	2	2
Military Drill, 232-----	3	3	3

## VIIb. The Two Year Course in Textile Industry.

## First Year.

Carding and Spinning, 194-----	3½	3½	3½
Weaving, 195-----	3½	3½	3½
Textile Designing, 196-----	2	2	2
Free-hand Drawing, 206-----	2	--	--
Mechanical Drawing, 207-----	--	2	2
Wood-work, 209-----	1	1	1
Forge-work, 210-----	1	1	1
Mechanical Technology, 214-----	1	1	1
English, 224-----	3	3	3
Military Drill, 232-----	3	3	3

## Second Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 194-----	4	4	4
Weaving, 195-----	4	4	4
Textile Designing, 196-----	3	3	3
Mechanical Drawing, 208-----	2	2	2
Forge-work, 211-----	1	--	--
Pattern-making, 212-----	--	1	1
Mechanical Processes, 215-----	1	1	1
English, 225 and 227-----	2	2	2
Military Drill, 232-----	3	3	3

## THE TWO YEAR COURSE IN DYEING.

This course is established primarily for the benefit of young men who have had practical experience in dyeing, and who desire to obtain a knowledge of the fundamental principles of chemistry, and of dyeing, upon which their work is based. The work is intended to give the student such a grasp of the subject that he will be able to test new dyes and mordants, and introduce new methods and new processes as they are needed, or are devised. It is believed that any practical dyer can spend two years with considerable profit to himself at this College, if he has not already had training in chemistry and the principles of dyeing.

## VIIb. The Two Year Course in Dyeing.

## First Year.

Inorganic Chemistry, 201-----	3	3	3
Inorganic Chemistry (laboratory), 202----	2	2	2
Textile Chemistry and Dyeing, 197-----	2	2	2
Textile Chemistry and Dyeing (lab.), 198--	2	2	2
Physics, 217-----	2	2	2
Algebra, 220-----	4	4	--
Geometry, 221-----	--	--	4
English, 224-----	3	3	3
Military Drill, 232-----	3	3	3



## Second Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 199 -----	2	2	2
Dyeing (laboratory), 200 -----	4	4	4
Organic Chemistry, 203 -----	2	2	2
Analytical Methods, 204 -----	1	1	1
Analytical Chemistry (laboratory), 205 -----	2	2	2
Geometry, 221 -----	4	--	--
Trigonometry, 222 -----	--	4	4
English, 225, 224 -----	2	2	2
Military Drill, 232 -----	3	3	3

## TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus, just beyond the Horticultural Building. It is a two-story brick building 125 x 75 feet, with a basement, erected from the plans of The D. A. Tompkins Co., Charlotte, N. C. Throughout its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class-room for instruction in dyeing and will be further equipped as a dye-house. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton mill machinery manufactured by American builders. The following is a list of the machines and their makers:

## Carding Department.

**Opening-room.**—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

**Carding-room.**—One 40-inch revolving flat card, 110 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine



Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head with coiler, metallic rolls and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One 36-spindle slubber for  $11 \times 5\frac{1}{2}$ -inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for  $9 \times 4\frac{1}{2}$ -inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for  $7 \times 3\frac{1}{2}$ -inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for  $6 \times 2\frac{1}{2}$ -inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

### Spinning Department.

**Spinning-room.**—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 72-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Saco & Pettee Machine Shops, Biddeford, Me.

**Spooling, Twisting, and Winding.**—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 72-spindle twister, one-half for wet, one-half for dry twisting, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 6-spindle universal winding machine, made by Universal Wind-

ing Co., Boston, Mass. One 12-spindle bobbin winding machine, made by W. W. Altemus & Son, Philadelphia, Pa.

### Weaving Department.

**Warp Preparation.**—One section warper, 400 ends, made by Draper Company, Hopedale, Mass. One beaming machine, made by Lewiston Machine Co., Lewiston, Me.

**Looms.**—One Northrop-Draper print cloth loom; one Northrop-Draper sateen loom, made by Draper Company, Hopedale, Mass. One high-speed loom, made by Kilburn & Lincoln, Fall River, Mass. One sheeting loom; one side cam loom, made by Whitin Machine Works, Whitinsville, Mass. One print cloth loom; one sheeting loom; one 2x1 box loom; one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One Crompton 4x1 box gingham loom; one Crompton 4x1 box loom, with 20-harness dobby; one Crompton single box loom, with 400 hook Jacquard head; one Knowles Gem loom, 4x4 box; one Stafford single box loom, with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass.

### Dyeing Department.

The laboratory instruction in dyeing has been given hitherto in the Chemical Laboratory in the Main Building. The department has a collection of about a thousand samples of dyes, a large number of sample cards, and all the important books on dyeing. Samples of new dyes are usually received as they are placed on the market by the dealers. Quarters for instruction in dyeing have been provided in the Textile Building, recently constructed, consisting of a large dye-house 70x50 feet, a dyeing laboratory 32x25 feet, a lecture-room, an office, and a store-room. It is expected that these rooms will be fully equipped by the opening of the College in September.

### Power Installation.

One switch-board, made by D. A. Tompkins Co., Charlotte, N. C. One 10-horse-power S. K. C. induction motor, made by Stanley Electric and Manufacturing Co., Pittsfield, Mass. One 10-horse-power induction motor; one 15-horse-power induction motor, made by Westinghouse Electric and Manufacturing Co., Pittsburg, Pa. Pulleys, shafting, hangers and couplings, made by Jones & Laughlins, Pittsburg, Pa.

### Description of Subjects.

**194. Carding and Spinning.**—Lectures and recitations; practice in operating card and spinning-room machinery. Cotton; classifying the plant; its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; cards; railway-heads; drawing-frames; slubbers; intermediates; speeders; jacks. Ring spinning-frames and mules. Spoolers and warpers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Required of Sophomores, Juniors and Seniors in the full course and of first and second-year students in the short course. Professor WILSON.

**195. Weaving.**—Lectures and recitations; practice in operating and fixing looms, warp preparation, cloth-room and finishing machinery. Preparing warps for the looms; pin frame warpers, section warpers, beam warpers. Sizing, size vats, slasher. Drawing-in and reeding. Weaving; hand and power looms. Construction of plain loom, principal movements in weaving; cams and their construction. Auxiliary movements. Drop box motion; chain building for box looms, multipliers, setting and timing of box motions. Dobby; single and double action, negative and positive head motions, dobbies with extra appliances necessary for weaving lenos; towel and other pile fabrics. Jacquard; construction and tie up. Finishing; gray goods and colored cottons. Folding and packing for the market. Required of Juniors and Seniors in the full course and of first and second-year students in the short course. Mr. NELSON.

**196. Textile Designing.**—Lectures and practice in design construction and cloth analysis. Foundation weaves; derivative weaves. Design paper; methods of representing weaves on paper. Combination of weaves; figured weaving on plain ground. Construction of satin cloth; construction of checked cloth. Color and color effects. Weaves of a peculiar character. Bedford cords, piqués. Cloths backed with filling; cloths backed with warp. Double cloths. Figuring with extra warp; figuring with extra filling. Leno with one or more sets of doups. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Analysis of stripes, checks, and fancy cloths. Calculating particulars of cloth from data ascertained from sample.

Calculations to obtain quantities of warp and filling in stripe and check fabrics; for shrinkage or contraction; ply yarns; to find number of thread per inch using a given weight of warp; also number of picks per inch using a given weight of filling. Reed and harness calculations. Methods of representing harness and reed drafts. Construction of cloth. Balance of cloth. Required of Juniors and Seniors in the full course, and of first and second-year students in the short course. Mr. NELSON.

### DYEING.

**197. Textile Chemistry and Dyeing.**—Lectures. A study of the chemistry of the textile fibers, and the principles involved in bleaching, dyeing, and printing. The student becomes acquainted with methods and machinery for dyeing cotton, wool, silk, and mixed goods, and learns the most important dyes now in use. Two periods. Required of Juniors. Doctor FRAPS.

**198. Textile Chemistry and Dyeing.**—Laboratory work. The experiments are designed to accompany Course 197. Working with small skeins of yarns, the student learns different methods of dyeing, applies a number of dyes, tests their fastness to washing, and other agencies, and applies other tests. All dyed skeins and fastness tests are entered in suitable scrap-books. Two periods. Required of Juniors. Doctor FRAPS.

**199. Dyeing.**—Lectures. A further study of the properties and modes of application of dye-stuffs and mordants, especially those applied to cotton. Detailed study is made of certain important methods of dyeing cotton, as indigo, turkey red, aniline black, etc. Two periods. For second-year students in the Two Year Course in Dyeing.

**200. Dyeing Laboratory.**—Involves the bleaching and dyeing of cotton in the dye-house, dyeing to a given shade, mixing of dyes, and practical dye-tests. The student learns how to study a new dye and devise methods for its practical application. Four periods. For second-year students in the Two Year Course in Dyeing.

### CHEMISTRY.\*

**201. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor FRAPS.

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\* For further information see Courses in Industrial Chemistry.

**202. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs, under the eye of the instructor, experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. SYME.

**203. Organic Chemistry.**—Remsen's *Introduction to the Study of Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. For second-year students in the Two Year Course in Dyeing. Mr. BIZZELL.

**204. Analytical Methods.**—A discussion of methods and principles involved in qualitative and quantitative analysis. One period. For second-year students in the Two Year Course in Dyeing. Mr. BIZZELL.

**205. Analytical Chemistry (Introductory).**—Laboratory work. Caldwell's *Chemical Analysis*. The student is taught to detect the presence of the more common elements in unknown substances. He is given practice in introductory gravimetric and volumetric quantitative work. Two periods. For second-year students in the Two Year Course in Dyeing. Mr. SYME.

### MECHANICAL ENGINEERING.\*

**206. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. CHITTENDEN.

**207. Elementary Mechanical Drawing.**—Use of instruments; geometric drawing; isometric drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Freshmen and first-year students. Mr. CHITTENDEN.

**208. Mechanical Drawing.**—Working sketches and drawing machine parts from the model; tracing and blue-printing; elementary machine design. Two periods. Required of Sophomores. Mr. CHITTENDEN.

**209. Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning; handling of wood-lathes and tools. One period. Required of Freshmen. Mr. BRAGG and Mr. CARTER.

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\*For full information see Course in Mechanical Engineering.



**210. Forge-work.**—Exercises in working with iron, welding; uses and care of forge-tools and fires. One period. Required of Freshmen. Mr. OLIVER CARTER.

**211. Forge-work.**—Exercises in working with steel; tempering; case-hardening. One period. Required of second-year students. Mr. OLIVER CARTER.

**212. Pattern-making.**—Exercises in making patterns, generally of machine parts. One period, second and third terms. Required of second-year students. Mr. BRAGG and Mr. CARTER.

**213. Machinists' Work.**—Bench and machine-work; exercises in chipping and filing; exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. One period. Required of Sophomores. Mr. PARK.

**214. Mechanical Technology.**—Classification and uses of wood-working and forging-tools and machines; principles of correct methods of wood-working and forging; care of belting and shafting. One period. Required of Freshmen. Mr. CARTER.

**215. Mechanical Processes.**—Description of machines used in engineering-work; methods of pattern-making; moulding, casting and heavy forging; description of various machine tools and methods of performing work on them; boiler-making and plate-work. One period. Required of second-year students. Professor DICK.

**216. Steam-engine.**—Descriptive study of the simple steam-engine; names and uses of the various parts of an engine; various types of engines and fittings, foundations and pipings; different types of boilers and setting; arrangement of power plants; care of engines and boilers. Two periods. Required of Seniors. Professor DICK.

### PHYSICS.\*

**217. Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**218. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Sophomores. Professor WEIHE.

### ELECTRICAL ENGINEERING.

**219. Dynamo Machinery.**—Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two periods. Required of Juniors. Professor WEIHE and Mr. WALTER.

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\* For full information see Course in Electrical Engineering.

## MATHEMATICS.\*

**220. Advanced Algebra.**—Begins at quadratic equations; general theory of equations; solution of higher equations, etc. Wells's *Higher Algebra*. Four periods, first and second terms. Required of Freshmen. Mr. YATES and Mr. FISH.

**221. Geometry.**—Plane and solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of Freshmen. Four periods, first term. Required of Sophomores. Mr. YATES.

**222. Trigonometry.**—Four hours, second and third terms. Required of Sophomores. Mr. YATES.

**223. Book-keeping.**—The work of the text-books supplemented by numerous original examples and sets for practice. One period. Required of Freshmen. Mr. YATES.

## ENGLISH.

**224. Introductory Rhetoric and Composition.**—Scott & Denney's *Composition Rhetoric* and Buehler's *Exercises* are used as texts. These are accompanied by drills on the forms of the language and methods of sentence formation. The student is taught to plan all work, and every effort is made to develop his constructive faculties. Three periods. Required of all Freshmen. Professor HILL and Mr. OWEN.

**225. Rhetoric.**—Newcomer's *Rhetoric*. The organic parts of discourse and the essential qualities of good style are considered. Especial study is given this year to themes in narration and description. Many exercises are required. Required of all Sophomores. Two periods, first and second terms. Professor HILL.

**226. Analysis and Construction of Themes in Exposition and Argumentation.**—Two periods, third term. Required of all Seniors. Professor HILL.

**227. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Professor HILL.

**228. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two

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\*For full information see Course in Civil Engineering.



periods, first and second terms. Required of Seniors. Professor HILL.

### HISTORY.

**229. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**230. English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of all Juniors. Professor HILL.

### POLITICAL ECONOMY.

**231. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Two periods. Required of Seniors. President WINSTON.

### MILITARY SCIENCE.

**232. Drill.**—Schools of the Soldier, Company, and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**233. Tactics.**—Theoretical instruction in the Schools of the Soldier, Company, and Battalion in Close and Extended Order; Ceremonies, etc. One period. Required of all Juniors. Captain PHELPS.

## DONATIONS.

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The College makes thankful acknowledgment of the receipt of the following gifts during the year :

### To the Department of Agriculture.

*Acme Harrow Company, Millington, N. J.*—Acme pulverizing harrow.  
*John Deere & Co., Moline, Ill.*—One disc plow.

*Chattanooga Plow Company, Chattanooga, Tenn.*—One two-horse turning plow.

*Bucher & Gibbs Company, Canton, O.*—One two-horse turning plow.

*D. M. Osborne & Co., Charlotte, N. C.*—One two-horse mowing machine.

*B. F. Avery & Co., Louisville, Ky.*—One two-horse corn planter and check rower, one one-horse corn planter and one two-horse cultivator with spring-tooth attachment.

*Cornell Incubator Company, New York, N. Y.*—Four incubators and brooders.

*Star Incubator and Brooder Company, Roundbrook, N. J.*—One incubator and brooder.

*Cornell Incubator Company*—Four incubators and four brooders.

*Star Incubator and Brooder Company*—One incubator and one brooder.

*McCormick Harvester Company*—One mower, one harvester, one rake, one corn harvester, and one corn shredder.

### To the Department of Biology.

*Dr. Frank Lincoln Stevens*—Between five hundred and seven hundred herbarium specimens of plants native to North Carolina.

### To the Department of Chemistry.

*Ada Manufacturing Company, Charlotte, N. C.* (through David Clark, Secretary and Treasurer)—25 pounds cotton yarn.

*Berlin Aniline Works, New York*—6 four-ounce bottles of dyes.

*J. A. and W. Bird, Philadelphia, Pa.*—24 four-ounce bottles of dyes and chemicals.

*Carborundum Company, Niagara Falls, N. Y.*—Samples of coke, spar, sand, and clay, from which carborundum is made, and seven samples of finished products.

*Conda Color Company, New York*—4 two-ounce bottles of dyes.

*Dyers' Bulletin, Philadelphia*—Dyers' Bulletin.

*Dyers' Trade Journal, Philadelphia*—Dyers' Trade Journal.

*Farbenfabriken of Elberfeld Co., New York*—26 four-ounce bottles of dyes.

*John J. Keeler & Co., New York*—Collection of shade cards.

*Klipstein & Co., New York*—Collection of shade cards.

*Schoelkopf, Hartford and Hanna Company, Buffalo, N. Y.*—39 eight-ounce bottles of dyes.

*Sybes & Street, New York*—2 samples of dyes.

### To the Department of Textile Industry.

*Whitin Machine Works, Whitinsville, Mass.* (through Stuart W. Cramer, Southern Agent, Charlotte, N. C.)—One 40-inch revolving flat card; one 4-delivery drawing frame; one 80-spindle spinning frame; one side cam loom.

*Saco and Pettie Machine Shops, Biddeford, Me.* (through A. H. Washburn, Southern Agent, Charlotte, N. C.)—One 48-spindle intermediate roving frame; one 72-spindle spinning frame; one 80-spindle spinning frame.

*Kitson Machine Company, Lowell, Mass.* (through Stuart W. Cramer, Charlotte, N. C.)—One combination opener and breaker lapper; one 40-inch finisher lapper.

*Mason Machine Works, Taunton, Mass.* (through D. A. Tompkins Company, Charlotte, N. C.)—One 40-inch revolving flat card; two 80-spindle spinning frame; one print cloth loom; one plain loom; one 2x1 box loom; one 24-harness dobby loom.

*Woonsocket Machine and Press Company, Woonsocket, R. I.* (through Stuart W. Cramer, Southern Agent, Charlotte, N. C.)—One 36-spindle slubber; one 64-spindle fine roving frame; one 80-spindle jack roving frame.

*Fales and Jenks Machine Company, Pawtucket, R. I.* (through O. A. Robbins, Charlotte, N. C.)—Two 80-spindle spinning frames; one 48-spindle wet and dry twister.

*Easton and Burnham Machine Company, Pawtucket, R. I.* (through O. A. Robbins, Charlotte, N. C.)—One 32-spindle spooler.

*W. W. Altemus & Son, Philadelphia, Pa.*—One 12-spindle bobbin winding machine.

*Crompton and Knowles Loom Works, Worcester, Mass.*—Reduction on prices of looms.

*D. A. Tompkins Company, Charlotte, N. C.*—One switchboard.

*Jones & Laughlins, Pittsburg, Pa.*—Equipment of shafting, hangers, pulleys, and couplings.

*Fayweather & Laden, New York City.*—Hoyt's belting.

*Maloney-Bennett Belting Company, Chicago.*—Belting.

*Leonard & Ellis, Charlotte, N. C.*—Lubricating oils.

### Courtesies Extended.

Textile Excelsior, Charlotte, N. C.

Textile Manufacturers' Journal, New York City.

Fiber & Fabric, Boston, Mass.

Manufacturers' Record, Baltimore, Md.

Pilot Cotton Mills, Raleigh, N. C.

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WILLIAM FRANKLIN PATE, B. S. '01.	Snow Hill,	Chemistry.

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LEROY FRANKLIN ABERNETHY,	Hickory,	Agr.
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THOMAS CARL HINKLE,	Lexington,	M. A.
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CLARENCE LYTCH,	Laurinburg,	Agr.
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BENNIE JORDAN THIGPEN,	Tarboro,	Agr.
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OLIVER CARTER,	Garland,	E. E.
WILLIAM BENNETT DUNLAP,	Wadesboro,	Tex.
BENJAMIN BALLARD EGERTON,	Ingleside,	M. A.
HENRY D. FARRIOR,	Kenansville,	Tex.
RICHARD HUGH HARPER,	Patterson,	Tex.
SOLOMON WALLACE HOFFMAN,	Statesville,	Bi. and Ch.
JESSE McRAE HOWARD,	Wadesboro,	Tex.
JOSEPH MARSHALL LILES,	Wadesboro,	M. A.
WILLIAM McNEILL McKINNON,	Maxton,	Tex.
FRANK J. McMURRAY,	Wadesboro,	Agr.
PAUL EUGENE MORROW,	Burlington,	Tex.
GARLAND ROBERSON ROSE,	Statesville,	Draw.
JOHN HOUSTON SHUFORD,	Sandifer,	Tex.
CHARLES ALDERMAN SPAINHOUR,	Lenoir,	M. A.
GEORGE WIMBERLY SPEIGHT,	Wrendall,	M. A.
ATLAS THOMAS UZZELL, JR.,	Seven Springs,	Agr.
DONALD WITHERSPOON,	Newton,	E. E.

### Special Students.

THOMAS JACKSON ARNOLD, JR.,	Beverly, W. Va.,	C. E.
JOHN THOMAS BEST,	High Point,	Mch. Shop.
SAMUEL ROMULUS BIGGS,	Williamston,	Mch. Shop.
JOHN HORATIO BLANCHARD,	Woodland,	Mch. Shop.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
SHERWOOD BATTLE BROCKWELL,	Raleigh,	Mch. Shop.
HENRY PALMER CRAVER,	Boonville,	Mch. Shop.
PAUL FISHER DARDEN,	Murfreesboro,	C. E.
WILLIAM EDWARD DUNN,	Scotland Neck,	Mch. Shop.
PELHAM MARTIN FAUCETT,	Elfland,	Boi. Tend.
JOHN S. GRIERSON,	Mooresville,	Mch. Shop.
JOHN PERCY GRIMES,	Lexington,	Mch. Shop.
ARCHIBALD STUART HALL,	Scotland Neck,	Mch. Shop.
CHARLES WILLARD HARRELL,	Sunbury,	Mch. Shop.
TROYLUS DeCOSTA McBRAYER,	Shelby,	Mch. Shop.
LOUIS GEORGE REGGIO,	Raleigh,	Mch. Shop.
EUGENE THOMAS ROBESON,	Raleigh,	M. E.
GEORGE A. SHUFORD,	Wriston,	Mch. Shop.
J. F. WHITFIELD,	Winstead,	Mch. Shop.
EDWARD YONGE WOOTEN,	Wilmington,	E. E.

### Winter Course Students.

THOMAS DUFFY ARNOLD,	Cove,	Dairying.
JAMES HILL BOSTIAN,	Statesville,	Dairying.
JOHN KOONCE BROCK,	Trenton,	Dairying.
WILLIAM REDDEN COKER,	Tarboro,	Dairying.
ARCHIBALD BERRYMAN COLE,	Sanford,	Dairying.
FRANK JONES COURTS,	Reidsville,	Dairying.
MISS EULA LOUISA DIXON,	Snow Camp,	Dairying.
CLAUDE C. ERWIN,	Erwin, Ga.,	Dairying.
JASPER FLEMING,	Milton,	Dairying.
H. J. FOSCUE,	Pollocksville,	Dairying.
J. BURETTE HOUBE,	Charles,	Dairying.
CHARLES HARWARD,	Bridgeport,	Dairying.
JAY L. HUMPHREY,	Clarks,	Dairying.
HILLIARD POSTIL HUNSUCKER,	Conover,	Dairying.
WILLIE MATTHEW MCCAULEY,	Chapel Hill,	Dairying.
WILLIAM MUNROE MCFADYEN,	Raeford,	Dairying.
JOHN RUFUS MORRISON,	Statesville,	Dairying.
BENNIE JASPER ROSE,	Kenly,	Dairying.
LUTHER ESPY SIKES,	Greensboro,	Dairying.
ALONZO ALLEN TARLETON,	Long Pine,	Dairying.
ROBERT BERNICE WATSON,	Lemon Springs,	Dairying.
NUMA FLUTCH THOMPSON,	Stagville,	Dairying.

# TWELFTH ANNUAL COMMENCEMENT.

May 29, 1901.

## BACHELORS OF AGRICULTURE.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
MARTIN KELLOGG,	Sunbury,	Gates.
SOLOMON ALEXANDER VEST, B. S. in Chem., 1900.	Tobaccoville,	Forsyth.

## BACHELOR OF SCIENCE (IN BIOLOGY).

WILLIAM PESCU D CRAIGE,	Marion,	McDowell.
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## BACHELORS OF SCIENCE (IN CHEMISTRY).

PAUL COLLINS,	Raleigh,	Wake.
WILLIAM FRANKLIN PATE,	Snow Hill,	Greene.
BEVERLY NATHANIEL SULLIVAN,	Winston-Salem,	Forsyth.
CHARLES AUGUSTUS WATSON,	Raleigh,	Wake.

## BACHELORS OF ENGINEERING (IN CIVIL ENGINEERING).

FLETCHER HESS BARNHARDT,	Norwood,	Stanly.
FRED WILHELM BONITZ,	Wilmington,	New Hanover.
WILLIAM LOIS CRAVEN,	Concord,	Cabarrus.
WILLIAM DOLLISON FAUCETTE,	Halifax,	Halifax.
BENJAMIN OLIVER HOOD,	Asheville,	Buncombe.
LEWIS OMER LOUGEE,	Raleigh,	Wake.
CHARLES HARDEN McQUEEN,	Morven,	Anson.
WALTER STEPHEN STURGILL,	Sturgill,	Ashe.
BENJAMIN VADEN WRIGHT,	Coharie,	Sampson.

## BACHELORS OF ENGINEERING (IN ELECTRICAL ENGINEERING).

ZOLLY MOSBY BOWDEN,	Redland,	Davie.
BEDFORD JETHRO BROWN,	Charlotte,	Mecklenburg.
JESSE JAMES LILES,	Wadesboro,	Anson.

## BACHELORS OF ENGINEERING (IN MECHANICAL ENGINEERING).

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
FELIX GREY CRUTCHFIELD,	Winston-Salem,	Forsyth.
GEORGE MASLIN DAVIS,	Greensboro,	Guilford.
EDWARD OSCAR SMITH,	Crystal Hill,	Halifax, Va.

## BACHELOR OF ENGINEERING (IN TEXTILE INDUSTRY).

WILLIAM OSBORNE BENNETT,	Wadesboro,	Anson.
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## ELECTRICAL ENGINEER.

NUMA REID STANSEL,	Allenton,	Robeson.
B. S. in E. E., 1898.		

## PRIZES.

### First Prize.

LEONIDAS JOYNER,	Bunyon,	Beaufort.
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### Second Prize.

JAMES CLARENCE TEMPLE,	Sanford,	Moore.
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## CHAMBERLAIN PRIZE.

### For Best Kept Account of Expenses.

WALTER LINDSAY FULP,	Fulp,	Stokes.
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### For the Least Unnecessary Expenses.

HUGH PIERCE FOSTER,	Nance,	Rockingham.
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## HONORS IN SCHOLARSHIP.

### Senior Class.

FLETCHER HESS BARNHART,	Norwood,	Stanly.
WILLIAM PESCU D CRAIGE,	Marion,	McDowell.
WILLIAM DOLLISON FAUCETTE,	Halifax,	Halifax.
MARTIN KELLOGG,	Sunbury,	Gates.
WILLIAM FRANKLIN PATE,	Snow Hill,	Greene.
WALTER STEVEN STURGILL,	Sturgill,	Ashe.

**Sophomore Class.**

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
JOHN ELIOT COIT,	Salisbury,	Rowan.
WALTER LEE DARDEN,	Goldsboro,	Wayne.
JOHN HOWARD GLENN,	Crowder's Creek,	Gaston.
GASTON WILDER ROGERS,	Raleigh,	Wake.
EDWIN SEYMOUR WHITING,	Hamlet,	Richmond.

**Freshman Class.**

FRANK HAMILTON BROWN,	Cullowhee,	Jackson.
JARVIS BENJAMIN HARDING,	Greenville,	Pitt.
ERNEST EDWIN LINCOLN,	Kinston,	Lenoir.

**Short Course Class—First Year.**

ODIS HILDRETH HENDERSON,	Hampstead,	Pender.
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**HONORS FOR PUNCTUALITY.****Senior Class.**

EDWARD OSCAR SMITH,	Crystal Hill,	Halifax, Va.
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**Junior Class.**

WILLIAM LEWIS BARLOW,	Tarboro,	Edgecombe.
WILLIAM DAVID BOSEMAN,	Rocky Mount,	Nash.

**Sophomore Class.**

KENNETH CLYDE WAGSTAFF,	Winstead,	Person.
THEOPHILUS THOMAS ELLIS,	Stubbs,	Cleveland.
JOHN DANIEL FERGUSON,	Bladenboro,	Bladen.
HUGH PIERCE FOSTER,	Nance,	Rockingham.
LAMAR GIDNEY,	Shelby,	Cleveland.
EDWARD ROE STAMPS,	Raleigh,	Wake.

**Freshman Class.**

WILLIAM RICHARDSON, JR.,	Selma,	Johnston.
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**Irregular Students.**

JOSEPH EDGAR FULP,	Fulp,	Stokes.
JOHN PERCY GRIMES,	Lexington,	Davidson.

**Short Course—First Year.**

WILLIAM MCNEILL MCKINNON,	Maxton,	Robeson.
JAMES EUDY THIEM,	Raleigh,	Wake.

# REGISTER OF ALUMNI.

## CLASS OF 1893.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROBERT WILSON ALLEN, Principal of High School.	B. E.,	Reidsville, N. C.
SAMUEL ERSON ASBURY, M. S. 1896. Assistant Chemist State Agricultural Department.	B. S.,	Raleigh, N. C.
HENRY EMIL BONITZ, Architect.	B. E.,	Wilmington, N. C.
FRANK FULLER FLOYD, Superintendent Linotype Machines for <i>Knoxville Sentinel</i> .	B. E.,	Knoxville, Tenn.
CHARLES DUFFY FRANCKS, Farmer and Merchant.	B. E.,	Richlands, N. C.
EDWARD MOORE GIBBON, Machinist U. S. Government Dock-yard.	B. E.,	Port Royal, S. C.
GEORGE PENDER GRAY, Farm Manager.	B. S.,	Silver Lake, Fla.
CHARLES BOLLING HOLLADAY, Assistant Treasurer Richmond Trust and Safe Deposit Co.	B. E.,	Richmond, Va.
WILLIAM McNEILL LYTCH, Locomotive Engineer.	B. E.,	Montbrook, Fla.
WALTER JEROME MATHEWS, Electrician and Chief Engineer for the Eastern N. C. Asylum for the Insane.	B. E.,	Goldsboro, N. C.
JAMES WILLIAM McKOY, Civil Engineer and Merchant.	B. E.,	Black Mountain, N. C.
FRANK THEOPHILUS MEACHAM, M. S. 1894. Farm Superintendent State School for Deaf and Dumb.	B. S.,	Morganton, N. C.
CARL DEWITT SELLARS, Engineer for Altamaha Cotton Mills.	B. E.,	Altamaha, N. C.
CHARLES EDGAR SEYMOUR, Dairy Farm and Stock-raising.	B. S.,	Louisburg, N. C.
BUXTON WILLIAMS THORNE, Assistant Cashier Merchants and Farmers Bank.	B. E.,	Holly Springs, Miss.
WILLIAM HARRISON TURNER, Secretary and Treasurer Wachovia Mills (F. & H. Fries).	B. E.,	Salem, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES BURGESS WILLIAMS, M. S. 1896. Assistant Chemist State Agricultural Department.	B. S.,	Raleigh, N. C.
LOUIS THOMAS YARBROUGH, Associate Engineer Cape Fear Power Co.	B. E.,	Raleigh, N. C.
SAMUEL MARVIN YOUNG, Of S. M. & W. J. Young.	B. E.,	Raleigh, N. C.

### CLASS OF 1894.

CHARLES EDWARD CORPENING, Farmer and Dealer in Lumber and Real Estate.	B. E.,	Lenoir, N. C.
DAVID COX, JR., Architect and County Surveyor.	B. E.,	Hertford, N. C.
ROBERT DONNELL PATTERSON, JR., M. S. 1898. With American Tobacco Co.	B. S.,	Durham, N. C.
CHARLES PEARSON, Architect.	B. E.,	Mobile, Ala.
ZEBBIE GEORGE ROGERS, Secretary and Treasurer.	B. E.,	Danville, Va.
JOHN HYER SANDERS, Locomotive Engineer N. & C. R. R.	B. E.,	Pinners Point, Va.
BENJAMIN FRANKLIN WALTON, Farmer.	B. S.,	Neuse, N. C.
JOHN McCAMY WILSON, Chief Engineer Spartanburg Railway, Gas and Electric Co.	B. E.,	Spartanburg, S. C.

### CLASS OF 1895.

*THOMAS MARTIN ASHE, Architect—Pearson & Ashe.	B. E.,	Raleigh, N. C.
JAMES ADRIAN BIZZELL, M. S. 1900. Graduate Student and Fellow in Chemistry Cornell University.	B. S.,	Raleigh, N. C.
JOHN ISHAM BLOUNT, C. E. 1897. M. E. Cornell University. Chief Engineer Tennessee Coal, Iron, Steel R. R. Co.	B. E.,	Ensley, Ala.
JAMES WASHINGTON BRAWLEY, Traveling Salesman.	B. S.,	Mooreville, N. C.
WALTER AUSTIN BULLOCK, Superintendent Tobacco Farm.	B. S.,	Climax, Ga.

\*Deceased.



<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DAVID CLARK (M. E. Cornell Univ.), M. E. 1896. C. E. 1897. General Manager and Treasurer Ada Cotton Mills and President Eugenia Manufacturing Co., Jonesboro, N. C.	B. E.,	Charlotte, N. C.
GEO. WASHINGTON CORBETT, JR., Machinist and Chief Engineer Durham Traction Co.	B. E.,	Durham, N. C.
EDWIN SPEIGHT DARDEN, With W. T. Clark & Co., Tobacconists.	B. S.,	Wilson, N. C.
WILLIAM KEARNEY DAVIS, JR., Superintendent Southside Manufacturing Co.	B. E.,	Salem, N. C.
JOSEPH CHARLES DEY, With Williams Bros.	B. S.,	Norfolk, Va.
LEE BORDEN ENNETT, Farmer.	B. S.,	Cedar Point, N. C.
ISAAC HENRY FOUST, Farmer and Mechanic McCormick Harvesting Machine Co.	B. E.,	Ramseur, N. C.
CHARLES WYLLIS GOLD, Business Manager <i>Wilson Times</i> , Editor <i>Dixie Farmer</i> .	B. S.,	Wilson, N. C.
WILLIAM HENRY HARRIS, M. E. 1896. Editor <i>Textile Excelsior</i> .	B. E.,	Charlotte, N. C.
CHRISTOPHER MILLER HUGHES, B. S. 1899. With Commercial and Farmers Bank.	B. E.,	Raleigh, N. C.
MALCOLM BEALL HUNTER, Textile Designer.	B. E.,	Philadelphia, Pa.
SAMUEL CHRISTOPHER McKEOWN, Superintendent Machine Shops.	B. E.,	Cornwell, S. C.
MANN CABE PATTERSON, With Richmond Locomotive and Machine Works.	B. E.,	Richmond, Va.
ABRAM HINMAN PRINCE, U. S. Soil Survey.	B. S.,	Washington, D. C.
VICTOR VASHTI PRIVOTT, Construction Engineer.	B. E.,	Pittsburg, Pa.
HOWARD WISWALL, JR., Inspector United States Engineers.	B. E.,	Norfolk, Va.
CHARLES GARRETT YARBROUGH, With Westinghouse Electric Company.	B. E.,	Pittsburg, Pa.
CHARLES MARCELLUS PRITCHETT, C. E. 1896. With D. A. Tompkins Co.	M. E.,	Charlotte, N. C.

## CLASS OF 1896.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DANIEL ALLEN,	B. S.,	Raleigh, N. C.
	Daniel Allen & Co.	
GEORGE STRONACH FRAPS,	B. S.,	Raleigh, N. C.
	Ph. D. Johns Hopkins University; Assistant Professor of Chemistry N. C. College of Agriculture and Mechanic Arts.	
MARION JACKSON GREEN,	B. S.,	Charlotte, N. C.
	Foreman Cole Manufacturing Co.	
JOHN HOWARD,	B. S.,	Shelbyville, Ky.
	Civil Engineer Southern Railway Co.	
WILLIAM COLBERT JACKSON,	B. S.,	Ayden, N. C.
	General Merchant.	
ROBERT GRAHAM MEWBORNE,	B. S.,	Louisville, Ky.
	Chemist Kentucky Tobacco Product Co.	
LEVI ROMULUS WHITTED,	B. S.,	Norfolk, Va.
	C. E. 1897. Draughtsman in Navy-yard.	
HENRY LLOYD WILLIAMS,	B. S.,	Merchant Mills, N. C.
	Merchant.	

## CLASS OF 1897.

JOSEPH SAMUEL BUFFALOE,	B. S.,	Garner, N. C.
	Physician.	
JOHN WILLIAM CARROLL,	B. S.,	Richmond, Va.
	Student Medical College of Virginia.	
CHARLES EDWARD CLARK,	B. S.,	Charlotte, N. C.
	Truck Farmer.	
WM. ALEXANDER GRAHAM CLARK,	B. S.,	Jonesboro, N. C.
	M. E. Cornell Univ. General Manager and Treasurer Eugenia Mfg. Co.	
NICHOLAS LOUIS GIBBON,	B. S.,	Greenville, S. C.
	Mill Architect and Engineer.	
CEBURN DODD HARRIS,	B. S.,	Raleigh, N. C.
	Assistant Chemist N. C. Department of Agriculture and Assistant in Analytical Chemistry Cornell University.	
JERE EUSTIS HIGHSMITH,	B. S.,	Parkersburg, N. C.
	Farmer.	
CLYDE BENNETT KENDALL,	B. S.,	Columbia, S. C.
	Civil Engineer Baltimore & Ohio R. R.	
SYDNEY GUSTAVUS KENNEDY,	B. S.,	Newport News, Va.
	With Newport News Ship Building Co.	

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JOSEPH LAWRENCE KNIGHT, Turpentine Business.	B. S.,	Jacksonville, Fla.
WALTER JONES MCLENDON, JR., Superintendent Wadesboro Cotton Mill.	B. S.,	Wadesboro, N. C.
REPTON HALL MERRITT, Book-keeper Cotton Mill.	B. S.,	McAdenville, N. C.
ALBERT HICKS OLIVER, Dairyman and Farm Superintendent.	B. S.,	New Orleans, La.
HUGH WILLIAMS PRIMROSE, M. S. 1900. Chemist Tennessee Coal, Iron and Railroad Co.	B. S.,	Sheffield, Ala.
WILLIAM HUNTER SAUNDERS, Chief Engineer Roanoke Navigation and Water Power Co.	B. S.,	Roanoke Rapids, N. C.
THOMAS JEHU SMITHWICK, Electrical Engineer Navy-yard.	B. S.,	Port Royal, S. C.
LEA WATSON, Mechanical Engineer D. A. Tompkins Co.	B. S.,	Charlotte, N. C.
*BRADLEY JEWETT WOOTEN, Lieutenant U. S. Army.	B. S.,	Wilmington, N. C.

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### CLASS OF 1898.

DORSEY FROST ASBURY, Draughtsman Newport News Ship Building and Dry Dock Co.	B. S.,	Newport News, Va.
SIDNEY HAMILTON BECK, Draughtsman Newport News Ship-yards.	B. S.,	Newport News, Va.
ANSON ELIKEM COHOON, With Forestry Division Department of Agriculture.	B. S.,	Washington, D. C.
HUGH McCULLOM CURRAN, With Forestry Division Department of Agriculture.	B. S.,	Washington, D. C.
BENJAMIN CAREY FENNEL, M. E., 1900. Engineer and Salesman D. A. Tompkins Co.	B. S.,	Charlotte, N. C.
ALPHEUS ROUNTREE KENNEDY, Draughtsman Eastern Ship Building Co.	B. S.,	Gratan, Conn.
FREDERICK CREECY LAMB, Assistant Chemist N. C. Department of Agriculture.	B. S.,	Raleigh, N. C.
EDWIN BENTLEY OWEN, Instructor in English and Librarian N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.

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\*Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
MOORE PARKER, Assistant in Carding and Spinning	B. S.,	Clemson, S. C. Clemson Agricultural College.
NUMA REID STANSEL, Electrical Engineering Student	B. S.,	Ithaca, N. Y. Cornell University.
TEISAKU SUGISHITA, Engineer	B. S.,	Tokyo, Japan. Imperial Railway of Japan.
GEORGE FREDERICK SYME, Civil Engineer with West Virginia Central Railway.	B. S.,	Franklin, W. Va.

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### CLASS OF 1899.

WM. DAVIDSON ALEXANDER, JR., Assistant Superintendent	B. S.,	Charlotte, N. C. Mecklenburg Iron Works.
IRA WILSON BARBER, Electrical Machinist	B. S.,	Port Royal, S. C. Naval Station.
JOHN HENDERSON BIRDSONG, Chemist	B. S.,	Bessemer, Ala. Tennessee Coal, Iron and Railway Co.
FRANCIS MARION FOY, Post-graduate Electrical Engineering and Instructor	B. S.,	Raleigh, N. C. N. C. College of Agriculture and Mechanic Arts.
ALBERT SIDNEY LYON, Superintendent	B. S.,	Roanoke Rapids, N. C. Roanoke Navigation and Water Power Co.'s Electrical Power Plant.
CARROLL LAMB MANN, Civil Engineer, with	B. S.,	Raleigh, N. C. S. A. L.
O'KELLY WILLIAM MYERS, Civil Engineer, with	B. S.,	Camden, S. C. S. A. L.
EUGENE LEROY PARKER, Chemist	B. S.,	Charleston, S. C. Virginia-Carolina Chemical Co.
EUGENE GRAY PERSON, Book-keeper	B. S.,	Concord, N. C. Gibson Manufacturing Co.
FREDERICK ERASTUS SLOAN, Registrar	B. S.,	Raleigh, N. C. N. C. College of Agriculture and Mechanic Arts.
ANDREW THOMAS SMITH, Erecting Machinist	B. S.,	Youngstown, Ohio. The Lloyd-Booth Co.
ALEXIS PRESTON STEELE, Of	B. S.,	Statesville, N. C. J. C. Steele & Son's Brick Machinery Co.
WILLIAM ANDERSON SYME, Instructor in Chemistry	B. S.,	Raleigh, N. C. N. C. College of Agriculture and Mechanic Arts.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
HUGH WARE,	B. S.,	King's Mountain, N. C.
	Farmer.	
CLAUD BURGESS WILLIAMS,	B. S.,	Richmond, Va.
Student University College of Medicine.		

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### CLASS OF 1900.

KEMP ALEXANDER,	B. E.,	Albemarle, N. C.
With Windemere Knitting Mill.		
LESLIE LYLE ALLEN,	B. E.,	Newport News, Va.
Draughtsman Newport News Ship Building Co.		
ROBERT LINN BERNHARDT,	B. S.,	Salisbury, N. C.
With Salisbury Hardware and Furniture Co.		
LESLIE GRAHAM BERRY,	B. E.,	Wilmington, Del.
With American Bridge Co.		
JAMES HARRY BUNN,	B. E.,	Henderson, N. C.
Assistant Secretary Henderson Cotton Mill.		
SAMUEL MERRILL HANFF,	B. S.,	Raleigh, N. C.
Instructor Morson's Academy.		
GEORGE ROLAND HARRELL,	B. S.,	Copperfield, Vt.
Chemist Copperfield Mines.		
HENRY ALLEN HUGGINS,	B. S.,	Wilmington, N. C.
GARLAND JONES, JR.,	B. S.,	Chicago, Ill.
Chemist Armour & Co.		
LOUIS HENRY MANN,	B. E.,	Baltimore, Md.
Student Dental College University of Maryland.		
ROBERT HALL MORRISON,	B. E.,	Mariposa, N. C.
Assistant Superintendent Cotton Mill.		
WILLIAM MONTGOMERY PERSON,	B. E.,	Bethlehem, Pa.
Student Lehigh University.		
JUNIUS EDWARD PORTER,	B. E.,	Jacksonville, Fla.
Timber Inspector S. A. L.		
ROGER FRANCIS RICHARDSON,	B. E.,	Newport News, Va.
Draughtsman Newport News Ship Building Co.		
WILLIAM EDWIN ROSE,	B. E.,	Wilmington, N. C.
With Wilmington Iron Works.		
FLOYD DE ROSS,	B. E.,	Charlotte, N. C.
Electrician.		

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
IRA OBED SCHAUB, Student in Chemistry Johns Hopkins University.	B. S.,	Baltimore, Md.
JOHN WADE SHORE, Farmer.	B. S.,	Boonville, N. C.
WILLIAM TURNER SMITH, With Wilmington Iron Works.	B. E.,	Wilmington, N. C.
SOLOMON ALEXANDER VEST, Chemist Navassa Guano Co.	B. S.,	Wilmington, N. C.
ROSCOE MARVIN WAGSTAFF, With Newport News Ship Building Co.	B. E.,	Newport News, Va.
GAITHER HALL WHITING, Assistant Chemist Virginia-Carolina Chemical Co.	B. S.,	Richmond, Va.

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### CLASS OF 1901.

FLETCHER HESS BARNHARDT, Draughtsman with Phoenix Bridge Co.	B. E.,	Phoenixville, Penn.
WILLIAM OSBORNE BENNETT, Farmer.	B. E.,	Wadesboro, N. C.
FRED WILLIAM BONITZ, Mechanical Constructor Standard Oil Co.	B. E.,	Baltimore, Md.
ZOLLY MOSBY BOWDEN, Testing Department General Electric Co.	B. E.,	Schenectady, N. Y.
BEDFORD JETHRO BROWN, With the Westinghouse Electric Co.	B. E.,	Pittsburg, Penn.
PAUL COLLINS, Chemist Caraleigh Phosphate and Fertilizer Co.	B. S.,	Raleigh, N. C.
WILLIAM PESCU D CRAIGE, With Peter F. Pescud, Insurance.	B. S.,	New Orleans, La.
WILLIAM LOIS CRAVEN, Structural Draughtsman American Bridge Co.	B. E.,	Pittsburg, Penn.
FELIX GRAY CRUTCHFIELD, Machinist Baldwin Locomotive Works.	B. E.,	Philadelphia, Penn.
GEORGE MASLIN DAVIS, With Salem Iron Works.	B. E.,	Winston-Salem, N. C.
WILLIAM DOLLISON FAUCETTE, Civil Engineer S. A. L. Railway.	B. E.,	Savannah, Ga.
BENJAMIN OLIVER HOOD, Structural Draughtsman American Bridge Co.	B. E.,	Pittsburg, Penn.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
MARTIN KELLOGG,	B. Agr.,	Sunbury, N. C.
	Farmer.	
JESSE JULIAN LILES,	B. E.,	Philadelphia, Penn.
	Machinist,	Baldwin Locomotive Works.
LEWIS OMER LOUGEE,	B. E.,	Pittsburg, Penn.
	Structural Draughtsman,	American Bridge Co.
CHARLES HARDEN MCQUEEN,	B. E.,	Durham, N. C.
	Civil Engineer with J. L. Ludlow,	C. E.
WILLIAM FRANKLIN PATE,	B. S.,	Urbana, Ill.
	Assistant Chemist,	Agricultural Experiment Station.
EDWARD OSCAR SMITH,	B. E.,	Newport News, Va.
	Draughtsman,	Newport News Ship Building and Dry Dock Co.
WALTER STEPHEN STURGILL,	B. E.,	Raleigh, N. C.
	Instructor in Mathematics	Agricultural and Mechanical College.
BEVERLY NATHAN SULLIVAN,	B. S.,	Winston-Salem, N. C.
	With Winston-Salem Gas and Lighting	Establishment.
CHARLES AUGUSTUS WATSON,	B. S.,	
BENJAMIN VADEN WRIGHT,	B. E.,	Beaumont, Texas.
	Engineer's Office.	





THE  
NORTH CAROLINA COLLEGE  
OF  
AGRICULTURE AND MECHANIC ARTS,  
WEST RALEIGH.  
1902—1903.



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1903.



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## COLLEGE CALENDAR.

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### 1903.

Thursday,	July	9,	{ Entrance examination at each county court-house, 10 A. M.
Wednesday,	September	2,	{ Entrance examination at the College, 9 A. M.
Thursday,	September	3,	First Term begins; Registration Day.
Thursday,	November	26,	Thanksgiving Day.
Tuesday,	December	22,	First Term ends.

### 1904.

Tuesday,	January	5,	Second Term begins; Registration Day.
Saturday,	March	12,	Second Term ends.
Monday,	March	14,	Third Term begins; Registration Day.
Sunday,	May	22,	Baccalaureate Sermon.
Monday,	May	23,	Alumni Day.
Tuesday,	May	24,	Annual Oration.
Wednesday,	May	25,	Commencement Day.

## BOARD OF TRUSTEES.

(State Board of Agriculture).

---

S. L. PATTERSON, *President ex officio*, Raleigh.

T. K. BRUNER, *Secretary ex officio*, Raleigh.

---

JOHN M. FOREHAND, Rockyhook, First District.

J. B. STOKES, Windsor, Second District.

WM. DUNN, Newbern, Third District.

C. N. ALLEN, Auburn, Fourth District.

R. W. SCOTT, Melville, Fifth District.

A. T. MCCALLUM, Red Springs, Sixth District.

J. P. MCRAE, Laurinburg, Seventh District.

R. L. DOUGHTON, Laurel Springs, Eighth District.

W. A. GRAHAM, Machpelah, Ninth District.

A. CANNON, Horse Shoe, Tenth District.

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## BOARD OF VISITORS.

---

W. S. PRIMROSE, *President*, Raleigh.

R. L. SMITH, *Secretary*, Albemarle.

---

D. A. TOMPKINS, Charlotte.

FRANK WOOD, Edenton.

MATT. MOORE, Kenansville.

W. H. RAGAN, High Point.

DAVID CLARK, Charlotte.

GEORGE HOWARD, Tarboro.

W. J. PEELE, Raleigh.

J. FRANK RAY, Franklin.

CHARLES W. GOLD, Wilson.

S. L. PATTERSON, Commissioner of Agriculture, *ex officio*.

GEO. T. WINSTON, President of the College, *ex officio*.

## FACULTY.

---

GEORGE TAYLOE WINSTON, A.M., LL.D., President and Professor of Political Economy.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

DANIEL HARVEY HILL, A.M., Professor of English.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Mathematics.

FREDERICK AUGUSTUS WEIHE, M.E., Ph.D., Professor of Physics and Electrical Engineering.

FREDERICK ELISHA PHELPS, Captain U. S. Army (retired), Professor of Military Science and Tactics.

HENRY MERRYMAN WILSON, A.B., Professor of Textile Industry.

CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Professor of Agriculture.

THOMAS MURRITT DICK, U. S. Navy, Professor of Mechanical Engineering.

TAIT BUTLER, V.S., Professor of Veterinary Science.

FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Biology.

BENJAMIN WESLEY KILGORE, M.S., Lecturer on Soils and Fertilizers.

ROBERT E. LEE YATES, A.M., Assistant Professor of Mathematics.

GEORGE STRONACH FRAPS, B.S., Ph.D., Assistant Professor of Chemistry.

CHALMER KIRK McCLELLAND, M.S., Assistant Professor of Agriculture.

CHARLES BENJAMIN PARK, Superintendent of Shops.

WILLIAM ANDERSON SYME, B.S., Instructor in Chemistry.

THOMAS ALFRED CHITTENDEN, B.S., Instructor in Mechanical Drawing.

VIRGIL WILLIAM BRAGG, Instructor in Wood-working.

THOMAS NELSON, Instructor in Weaving and Designing.



CHARLES LEMUEL FISH, B.S., Instructor in Civil Engineering.  
FRANKLIN SHERMAN, B.S.A., Instructor in Entomology.  
EDWIN BENTLEY OWEN, B.S., Instructor in English.  
HARRY CASPAR WALTER, B.S., Instructor in Electrical Engineering.  
JOHN CHESTER KENDALL, B.S., Instructor in Dairying.  
MRS. FRANK LINCOLN STEVENS, Instructor in Biology and Zoology.  
SAMUEL EDWARD WEBER, B.S., Instructor in Drawing.  
PHILIP ROLAND FRENCH, B.S., Instructor in Dyeing.  
CARROLL LAMB MANN, B.S., Instructor in Mathematics.  
ALESTER GARDEN HOLMES, B.S., Instructor in Mathematics.  
CHARLES WIGG MARTIN, Assistant in Botany.  
PINCKNEY GUSTAVE DEAL, Instructor in Forge Shop.

### OTHER OFFICERS.

MARSHALL DELANCEY HAYWOOD, Librarian.  
ARTHUR FINN BOWEN, Bursar.  
FREDERICK ERASTUS SLOAN, B.S., Registrar.  
BENJAMIN SMITH SKINNER, Farm Superintendent and Steward.  
JAMES RUFUS ROGERS, A.B., M.D. Physician.  
MRS. DAISY LEWIS, Hospital Matron.

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### AGRICULTURAL EXPERIMENT STATION DEPARTMENT.

GEORGE TAYLOE WINSTON, A.M., LL.D., President.  
BENJAMIN WESLEY KILGORE, M.S., Director.  
WILLIAM ALPHONSO WITHERS, A.M., Chemist.  
WILBUR FISK MASSEY, C.E., Horticulturist.  
CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Agriculturist.  
TAIT BUTLER, V.S., Veterinarian.  
FRANK LINCOLN STEVENS, M.S., Ph.D., Biologist.

FRANKLIN SHERMAN, Jr., B.S.Agr., Entomologist.

JOHN STRANCHON JEFFREY, Poultryman.

GEORGE STRONACH FRAPS, Ph.D., Assistant Chemist.

JOHN CHESTER KENDALL, B.S., Assistant, Dairy Husbandry.

BENJAMIN FRANKLIN WALTON, B.S., Asst., Field Experiments.

BENJAMIN SMITH SKINNER, Farm Superintendent.

ARTHUR FINN BOWEN, Bursar.

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### MILITARY ORGANIZATION.

CAPTAIN FREDERICK E. PHELPS, U. S. Army (retired),  
Commandant.

#### Staff.

L. N. BONEY, Major.

W. L. DARDEN, Captain and Adjutant.

H. P. FOSTER, Captain and Quartermaster.

C. E. TROTTER, First Lieutenant and Hospital Steward.

#### Non-Commissioned Staff.

J. B. HARDING, Sergeant-major.

W. J. PATTON, Quartermaster Sergeant.

P. S. GRIERSON, Color Sergeant.

#### Band.

E. T. ROBESON, Captain and Instructor.

J. H. PARKER, First Lieutenant.

H. L. ALDERMAN, Second Lieutenant.

B. F. HUGGINS, First Sergeant.

J. P. ROSE, Chief Musician.

R. H. HARPER, Drum-major.

H. B. CARTWRIGHT, Sergeant.

E. C. BAGWELL, Sergeant.

J. F. MCINTYRE, Sergeant.

**Company A.**

A. O. BRAY, Trumpeter.  
E. E. CULBRETH, Captain.  
E. S. LYTCH, First Lieutenant.  
E. E. ETHERIDGE, Second Lieutenant.  
T. T. ELLIS, Third Lieutenant.  
F. C. PHELPS, First Sergeant.  
J. A. MILLER, Second Sergeant.  
JAMES McKIMMON, Third Sergeant.  
W. M. McKINNON, Fourth Sergeant.  
B. A. BROOM, First Corporal.  
R. C. LEHMAN, Second Corporal.  
F. W. HADLEY, Third Corporal.  
G. P. MYATT, Fourth Corporal.

**Company D.**

C. L. CREECH, Captain.  
G. W. ROGERS, First Lieutenant.  
W. CLARK, JR., Second Lieutenant.  
J. S. P. CARPENTER, Third Lieutenant.  
W. RICHARDSON, First Sergeant.  
W. W. BARBER, Second Sergeant.  
JESSE M. HOWARD, Third Sergeant.  
A. C. WHARTON, JR., Fourth Sergeant.  
W. M. CHAMBERS, First Corporal.  
E. G. PORTER, Second Corporal.  
W. G. FINCH, Third Corporal.

**Company B.**

J. D. FERGUSON, Captain.  
J. M. KENNEDY, First Lieutenant.  
J. J. MORRIS, Second Lieutenant.  
G. Y. STRADLEY, Third Lieutenant.  
H. M. HUNTER, First Sergeant.

J. P. GULLEY, JR., Second Sergeant.  
J. C. BARBER, Third Sergeant.  
H. M. FOY, Fourth Sergeant.  
JULIAN M. HOWARD, First Corporal.  
W. W. WATT, Second Corporal.  
J. G. ASHE, Third Corporal.

### Company C.

S. W. ASBURY, Captain.  
W. M. BOGART, First Lieutenant.  
C. B. ROSS, Second Lieutenant.  
E. P. BAILEY, First Sergeant.  
E. E. LINCOLN, Second Sergeant.  
G. W. FOUSHEE, Third Sergeant.  
R. R. KING, Fourth Sergeant.  
W. SHANNONHOUSE, First Corporal.  
J. R. SECHREST, Second Corporal.  
S. T. WHITE, Third Corporal.

### Company E.

S. C. CORNWELL, Captain.  
D. S. OWEN, First Lieutenant.  
E. R. STAMPS, Second Lieutenant.  
J. T. LAND, Third Lieutenant.  
G. H. HODGES, First Sergeant.  
R. P. REECE, Second Sergeant.  
N. ADAMS, Third Sergeant.  
W. W. RANKIN, Fourth Sergeant.  
C. A. SEIFERT, First Corporal.  
R. R. HOLT, Second Corporal.  
S. D. WALL, Third Corporal.  
S. N. KNOX, Fourth Corporal.

**Company I.**

J. F. DIGGS, Captain.

J. W. WHITE, First Lieutenant.

E. H. RICKS, Second Lieutenant.

W. F. KIRKPATRICK, Third Lieutenant.

L. A. NEAL, First Sergeant.

M. E. WEEKS, Second Sergeant.

W. F. MORSON, Third Sergeant.

W. W. FINLEY, Fourth Sergeant.

L. M. HOFFMAN, First Corporal.

O. L. BAGLEY, Second Corporal.

J. D. SPINKS, Third Corporal.

W. L. SMITH, Fourth Corporal.

## GENERAL INFORMATION.

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The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and the late R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that, in the industrial life of North Carolina, the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was introduced in 1885, the bill which afterwards became a law having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill introduced by Senator Justin S. Morrill of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to \$7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was donated by the late R. S. Pullen. The College was formally opened for students October 1, 1889, with one building and five teachers.

Additional funds were provided afterwards by the National Congress to aid in the support of the College and the State Agricultural Experiment Station, which is now a department of the College.

The College is beautifully located on the extension of Hillsboro street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from twelve deep wells. The water is analyzed both chemically and bacteriologically at regular periods.

The College now owns six hundred acres of land and fifteen buildings, and its teaching force consists of thirty-one specialists. Its laboratories, drawing-rooms, and workshops are well equipped. Its library contains three thousand volumes, and its reading-room is well supplied with literary and technical journals and newspapers.

## BUILDINGS.

**The Main Building** is of brick, with brownstone trimmings, and is seventy by sixty feet; part four stories in height and the remainder two. The lower floors contain the offices of the President and the Bursar; several recitation-rooms; chemical and physical laboratories, and the armory. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are all well lighted, well ventilated, and conveniently arranged.

**The Mechanical Engineering Building** is a plain, substantial, two-story brick building, with large annex. It contains the laboratory, drawing-rooms and recitation-rooms, and shops of the department.

**The Boiler-house** is a single-story brick building, containing boilers, fire-pump, and the machinery connected with the steam-heating plant.

**Primrose Hall** is a two-story brick building, which has attached a fine range of glass structures. The lower, or basement floor, is occupied by the Horticultural laboratory and boiler-room. The upper floor contains a large lecture-room and Botanical laboratory. The plant-houses are five in number, and are immediately accessible from the lecture-rooms and laboratories.

**The Dairy and the Barn** are frame buildings of modern design, and carefully planned for the purposes to which they are devoted. The barn is fifty by seventy-two feet and three stories high; the dairy is twenty by forty feet and two stories high.

**The Textile Building** is a two-story brick building one hundred and twenty-five by seventy-five feet with a basement. Its construction is similar to a cotton-mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

**Watauga Hall** is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bathrooms, which are free for students' use.

**Pullen Hall.**—In honor of the late R. Stanhope Pullen, the greatest benefactor of the College, the large new building that will be finished in the spring of this year will be called Pullen Hall. The basement of this building will be used as a dining-room, and will seat five



hundred students. The second story will be used for library, reading-room, and lecture-rooms. The third story is to serve as the College auditorium. This room will be commodious, comfortable and well lighted.

**The Infirmary** is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, doctor's office and medicine closet. The rooms are large, well ventilated, well lighted and heated with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are suitable to hospitals.

**Dormitories.**—Four two-story brick buildings are used exclusively for dormitories.

The College is supplied with a steam fire-pump, reservoir, hydrants, and fire hose to protect the buildings from burning.

The third and fourth dormitories, Primrose Hall and the green-houses attached are heated by hot water; the Textile Building is heated by the Sturtevant hot-air system, and the other College buildings are heated by the Warren-Webster vacuum system of steam-heating.

## THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly, ratified March 12, 1877. Its work was greatly promoted by Act of Congress of March 2, 1877, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative Wm. H. Hatch of Missouri.

The Director's office is in the Agricultural Building in Raleigh and the laboratories in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, dairying, plant diseases and chemistry is carried on in the laboratories and on the College and adjoining grounds.

The Station is always glad to welcome visitors, who can reach it by street-car, and will gladly be shown the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It is always glad to receive and answer questions.

Publications relating to general farming matters and embodying the results of the experiments are published and sent free to all citi-

zens of the State who request them. A request addressed to the Agricultural Experiment Station, Raleigh, N. C., will bring these publications or answers to letters.

### THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending, and Road-building.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training; nor for lads lacking in physical development, mental capacity, or moral fibre; nor for those that are unable or unwilling to observe regularity, system, and order in their daily work.

### PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the student in the Freshman Class who earns the largest and the next largest amount of money by agricultural labor on the College farm.

The Arthur H. Thomas Company of Philadelphia offers to the Biological Club as first and second prizes two "Aplanatic Triplet" hand magnifiers, to be awarded for the most deserving work in biology.

The Vermont Farm Machine Co., of Bellow's Falls, Vt., offers a prize of their No. 7 U. S. Separator to the student preparing the best essay on the "Making of a Dairy Farm." The value of this prize is one hundred dollars.

P. M. Sharples, West Chester, Pa., offers a prize of one-half the list price of a Separator to the student preparing the best essay on the subject, "The Middle South as a Dairy Section." The value of this prize is from \$50 to \$250.

The Caraleigh Phosphate and Fertilizer Company offers a prize of a ton of high-grade fertilizer to the student preparing the best essay on "Soil Fertilization." The value of the prize is \$35.

Mr. Grimes Cowper, Raleigh, offers a prize of a pure bred registered Jersey Bull to the student preparing the best essay on "The Conformation of the Dairy Sire and Cow." The value of this prize is \$50.

The MacMillan Co., New York, offers a prize of a set of Rural Science books, complete, to the student preparing the best essay on "The Farmer and his Library." The value of this prize is \$25.

Charles Scribner's Sons, New York, offer a prize of a set of books on Agriculture to the student preparing the best essay on the subject, "The Farmer should be a Student Always." The value of this prize is \$5.

The Zenner Disinfectant Co., Detroit, Mich., offers a silver medal to the student making the best report on the Live Stock Exhibit at the State Fair. The value of this medal is \$25.

The North Carolina State Fair Association offers a prize of \$5 to the student preparing the best essay on the Live Stock Exhibit at the State Fair.

### DISCIPLINE.

The College is under military discipline and the students are regularly organized into a battalion. A printed copy of rules and regulations is furnished each student on admission, and he is expected to conform to the same during his connection with the institution. The discipline is intended to secure studious and economical habits, with punctuality, system, and order in the performance of all duties. A durable uniform, which is required to be worn on all occasions, prevents extravagance and folly in dress; rooms plainly furnished and a mess-hall economically managed by the College prevent extravagance in living; regular study hours, day and night, with proper restrictions as to visiting Raleigh, check, or at least minimize, tendencies to idleness, vice, and rowdiness.

Regular reports of scholarship and conduct are made to parents and guardians three times a year. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College. Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform-school, and its work must not be hindered by the presence of young men who are grossly vicious, idle or incompetent.

### **LIBRARY AND READING-ROOMS.**

The College Library and Reading-rooms are on the second story of the Main Building. The reading-rooms are supplied regularly with about one hundred and twenty-five magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about thirty-five hundred volumes. There are also reference libraries in the different departments. The library and reading-rooms are kept open from 8 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

### **LIBRARY FACILITIES.**

The Olivia Raney Library in Raleigh, containing now about seven thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

### **STATE MUSEUM.**

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

### **COLLEGE SOCIETIES.**

Such college organizations are encouraged as tend to the formation of good character, the development of manly physical vigor, and the promotion of literary, scientific, and technical research and training.

The Young Men's Christian Association, containing in its membership representatives of all the Christian denominations, meets regularly each Sabbath for conference, Bible study and worship, and exerts a wholesome influence throughout the College.

Members of the Association will meet and welcome new students at the depot.

**The Pullen, Leazar and Tenerian Literary Societies** afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

**The Biological Club** meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture.

**The Liebig Chemical Society** meets fortnightly for the discussion of chemical subjects and for review of the current chemical literature with which the College is well supplied.

**Electrical Engineering Society.**—The members of the Society meet once a week in the physical laboratory. To review the articles on electrical engineering in the current journals is one of the chief objects of the Society. The Society has at its disposal the best periodicals, most of which are furnished free of charge by the publishers.

**Farmers' Institute.**—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and the writing and reading of reports on various farm operations.

**The Rural Science Club** meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

**The Athletic Association** is intended to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty, it promotes practice in base-ball, foot-ball, etc. The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

**The Dramatic Club** presents at least one play each year to the students and people of Raleigh. The plays selected are of high literary character, and offer full opportunities for artistic and clever acting.



The Alumni Association meets on Monday of each year preceding Commencement day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This Association has established a Student Aid Fund to assist needy students in obtaining their education at the College by making them small loans.

### REQUISITES FOR ADMISSION.

Applicants for admission must be at least sixteen years of age and must bring certificates of good moral character from the school last attended.

**To the Four Year Courses.**—Applicants for admission to the Freshman Class of all four year courses will be examined on the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation or division into paragraphs.

**To the Two Year Courses.**—Applicants for admission to the two year course in Textile Industry will take the same examinations as those required of candidates for admission to the Freshman Class. Applicants for admission to the two year courses in Agriculture and in Mechanic Arts will be examined on Arithmetic (through decimal fractions), English Grammar and Composition, and American History.

Applicants for admission to the two year course in Agriculture, if they are twenty years of age, or over, will not be required to take the entrance examinations.

**To the Winter Courses.**—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

### TIME OF EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1903 is July 9th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail, or if there should not be room enough for him in the College. Entrance examinations will be held also at the College on the first Wednesday in September of each year. The date for 1903 is September 2d, 9 o'clock A. M.

## ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination :

1. Applicants for admission to winter courses over eighteen years of age.
2. Applicants for admission to the two year course in Agriculture, if they are over twenty years of age.
3. School-teachers holding teachers' certificates.
4. Graduates of those High Schools and Academies whose certificates are accepted by the Faculty of this College.

## SESSION.

The College session lasts nine months and opens annually the first Wednesday in September and closes the last Wednesday in May, with a vacation of about ten days at Christmas.

## EXPENSES.

The annual expenses are as follows :

Tuition, \$20 ; Lodging, \$10 ; Fuel and Lights, \$12.50 ; Furniture, \$2 ; Library, \$1 ; Incidental, \$1 ; Medical Fee and Medicine, \$4.50 ; Board, \$72. Payments are made monthly in advance. A fee of \$1 is charged all students reporting for registration after the regular day appointed for that purpose—said fee being placed to the credit of the student loan fund.

Students taking shop-work are required to pay a fee of \$1 at the beginning of each year for material and the use of tools. A similar fee of \$1 is collected from students taking drawing.

Students taking chemical laboratory instruction are required to make a deposit at the beginning of the year, to cover breakages, as follows: Sophomores, \$3; Juniors and Seniors, \$6; any unused portion of this will be returned at the end of the year. All students taking work in biological, physical, or electrical laboratory, will pay a fee of \$1.

Students taking instruction in the dyeing laboratory are required to make a deposit at the beginning of the year to cover breakages, as follows: Juniors, \$3; Seniors, \$6.

Textile students will make a deposit of \$5 at the beginning of the year, to cover cost of designing supplies, tools, etc., any unused portion of which will be returned at the end of the year.

There is no deduction for less time than one month, except for board. The College uniform costs, including cap, about \$13.85, the



uniform overcoat \$10 to \$13, one pair overshoes 75 cents to \$1, and must be paid for when received. A cheap set of overalls should be purchased for shop and field-work. *Each student must supply four sheets, two pillow-cases, four towels and two counterpanes, which he can bring from home, and must purchase his own books, stationery, drawing instruments and materials, which he can obtain at the College.* Students who are willing to work may reduce their total annual expenses to one hundred dollars, or even less.

### UNIFORM.

The College uniform must be worn by all students excepting winter course students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care will last a year. New students are especially cautioned not to bring with them to the College a supply of citizens' clothing, as the uniform must be worn on all occasions.

### FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition and lodging, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him. A scholarship once bestowed will be retained by the holder until graduation, unless he should prove neglectful of his studies or guilty of serious misconduct.

One hundred and twenty scholarships have been established by the Board of Agriculture for students in the four year and two year courses in Agriculture. These scholarships cover tuition, and are available for the time the student is in college. They also cover room rent if the College dormitories are not otherwise occupied.

### SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from \$4 to \$10 a month. There

is also occasional employment, paying from \$2.50 to \$5 a month. New students should not rely upon securing employment the first four months. Except when arrangements have been previously made with the College authorities, young men in needy circumstances are not advised to come to the College, unless during the year they can have at their command at least one hundred dollars.

### STUDENT LOAN FUNDS.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient time is given for repayment to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, *Alumni* and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to four hundred and eighty-six dollars.

The sum of sixty-nine dollars and fifty-one cents has been contributed by friends as a memorial to Mrs. S. C. Carroll, for many years matron of the College. This fund is also loaned to needy students.

### BOARD AND LODGING.

All students are expected to board in the College mess-hall and room in the College dormitories. An abundant supply of plain, nourishing food, with as large variety as possible, is furnished absolutely at cost. The charge at present is \$8 per month, payable in advance, with reduction in case of withdrawal during the month.

Rooms in the College dormitories are supplied with electric lights, steam heat and all necessary furniture, except sheets, pillow-cases, bed-spreads and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal. Lodging in the College buildings will not be supplied to special students, who are permitted, however, to board in the mess-hall, if they so desire.

Any student over twenty-one years of age is permitted to room and board outside the College.

**CARE OF THE SICK.**

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections, at frequent intervals, are made by the College physician. There is an abundant supply of pure water from twelve deep wells. Each cadet has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 10 o'clock, and in cases of serious illness, as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

## COURSES OF INSTRUCTION.

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The College offers the following Courses of Instruction :

### **I. Four Year Courses** leading to degrees in :

- 1st. Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).
- 2d. Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, and Mining Engineering).
- 3d. Industrial Chemistry** (including Metallurgy and Dyeing)
- 4th. Textile Industry** or Cotton Manufacturing.

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, green-houses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The Bachelor's degree is conferred upon any one who completes satisfactorily a Four Year Course.

**II. Short Courses** of two years (not leading to a degree) in Agriculture, in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machinist's Work and Drawing), and in Building and Contracting.

The Short Courses include nearly all the practical work of the Four Year Courses, with less theoretical instruction. They are intended for students who desire chiefly manual training or for those who are unable to complete the Four Year Courses.

**III. Winter Courses** in Agriculture and Dairying and in Road-building, beginning at the opening of College in January and extending to the close of the term, ending in March.

**IV. Normal Courses** for the training of teachers along industrial lines.

### **V. The Summer School.**

**VI. Graduate Courses**, extending over two years and leading to advanced degrees, are intended for students who have completed the Four Year Courses and who desire further instruction and training along special lines.

## AGRICULTURAL COURSES.

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### I. The Four Year Course in Agriculture.

#### Ia. The Two Year Course in Agriculture.

#### Ib. The Winter Course in Agriculture and Dairying.

**Aim and Scope.**—The aim of the Agricultural Courses is to train young men in both the science and the practice of their profession. It is believed that every young man preparing to farm needs a double education: one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

The four year course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domains of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of English Literature and of Political Economy as training studies, and reasonable attention to these studies is required.

The two year course is designed to meet the needs of those who are unable to take the longer course. It is especially devoted to the practical study of Agriculture and Horticulture, and their various branches, and the natural sciences which are so closely related to farming.

The ten weeks' winter course in Agriculture is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention.

The ten weeks' dairy course is a course in practical butter-making in accordance with the most approved methods of the modern creamery.

**Methods of Instruction.**—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are almost constantly assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Department of Agriculture is fitting up laboratories for investigation in Soil Physics and in the mechanical analysis of soils. The dairy department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices upon yield and upon fertility, in varieties of fruit, of vegetables, and of forage crops. The methods employed and the results obtained are freely used for instruction.

In work other than purely technical the agricultural students meet the same instructors and enjoy the same privileges as other students of the College. In all departments the laboratory method is freely employed. The student uses apparatus with his own hands and consults the literature of the subject at every step.

**Scholarships in Agriculture.**—One hundred and twenty scholarships have been established by the Board of Agriculture for students in the four year and the two year courses in Agriculture. These scholarships cover tuition (and room rent in the College dormitories if the College can furnish rooms), and are available for the time the student is in college.

**Self-support while a Student.**—The Board of Agriculture, in the interest of young men who are unable to meet necessary college expenses, has appropriated \$2,000 annually for student labor. This generosity on the part of the Board enables every student to pay a good part of his college expenses; some are able to meet the entire expense this way. This sum appropriated is intended solely to pay for farm work. The work is precisely the sort of work that is done on the farm—plowing, hauling, tile-laying, feeding beef cattle, feeding dairy cattle, feeding and grooming horses, running ditches and terraces, repairing machinery and tools, harvesting crops, the care of hogs, poultry, etc.

This feature in the courses of Agriculture is helpful not only in defraying college expenses, but serves as a training and education as well.



**Requisites for Admission.**—Applicants for admission to the four year course in Agriculture must be at least sixteen years of age. They are examined in the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, and American History.

For the two year course in Agriculture no entrance examinations are required if the applicant is at least twenty years old. Applicants not twenty years old desiring to enter the two year course will stand an examination in Arithmetic (through decimal fractions) English Grammar and Composition, and American History.

For the winter courses in Agriculture and Dairying no entrance examination is required, but applicants must be over eighteen years of age.

**I. Four Year Course in Agriculture,** leading to the Degree of Bachelor of Agriculture.

**Freshman Year.**

SUBJECTS.	PERIODS PER WEEK.*		
	1st Term.	2d Term.	3d Term.
Botany, Elementary, 28† -----	3	3	--
Botany, Systematic, 29 -----	--	--	3
Zoology, 35 -----	3	--	3
Zoology (Entomology), 37 -----	--	3	--
Elementary Horticulture, 23-----	4	--	--
Pomology, 24 -----	--	4	--
Dairying, 14 -----	--	--	4
Algebra, 55 -----	4	4	--
Geometry, 56 -----	--	--	4
English, 58 -----	3	3	3
Military Drill, 65-----	3	3	3

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

\*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.



## Sophomore Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock and Stock-judging, 1	3	--	--
Principles of Breeding and Stock-judging, 2	--	3	--
Stock-feeding, 3-----	--	--	3
Plant Diseases, 30-----	3	--	--
Human Physiology, 36-----	--	3	--
Physiological Botany, 31-----	--	--	3
Inorganic Chemistry, 39-----	3	3	3
Inorganic Chemistry (laboratory), 40-----	2	2	2
Physics, 47-----	2	2	2
Free-hand Drawing, 48-----	2	--	--
Mechanical and Agricultural Drawing, 49-----	--	2	2
English, 59 and 61-----	2	2	2
Military Drill, 65-----	3	3	3

## Junior Year.

Farm Equipment, 4-----	4	--	--
Soils, 5-----	--	4	--
Farm Crops, 6-----	--	--	4
Veterinary Anatomy, 19-----	4	--	--
Veterinary Medicine, 20-----	--	4	--
Veterinary Practice, 21-----	--	--	4
Agricultural Chemistry, 45-----	2	2	2
Organic Chemistry, 41-----	2	2	2
Wood-work, 50-----	1	1	--
Forge-work, 51-----	1	1	--
Mechanical Technology, 52-----	1	1	--
Farm Machinery, 7-----	--	--	3
English and History, 62 and 63-----	2	2	2
Military Tactics, 66-----	1	1	1
Military Drill, 65-----	3	3	3

Senior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
History of Agriculture, 18-----	--	--	3
Bacteriology, 33-----	3	3	--
English, 60 and 62-----	2	2	2
Political Economy, 64-----	2	2	2
Military Drill, 65-----	3	3	3
Elect ten periods of the following:			
Animal Husbandry (horses), 8-----	2	--	--
Animal Husbandry (cattle), 9-----	--	2	--
Animal Husbandry (sheep and swine), 10-----	--	--	2
Agronomy, 11-----	3	--	--
Special Crops, 12-----	--	3	--
Soil Physics and Soil Management, 13-----	--	--	3
Dairy Bacteriology, 15-----	3	--	--
Experimental Dairying, 16-----	--	3	--
Dairy Seminary, 17-----	--	--	3
Veterinary Medicine, 22-----	3	3	3
Market Gardening, 25-----	3	--	--
Forestry, 26-----	--	3	--
Landscape Gardening, 27-----	--	--	3
Plant Diseases (advanced), 34-----	2	--	--
Entomology (advanced), 38-----	--	2	--
Economic Botany, 32-----	--	--	2
Analytical Chemistry, (laboratory), 43-----	6	--	--
Analytical Methods, 42-----	1	1	1
Agricultural Chemical Analysis (lab'y), 44-----	--	6	6

Ia. The Two Year Course in Agriculture.

First Year.

Botany, Elementary, 28-----	3	3	--
Botany, Systematic, 29-----	--	--	3
Elementary Horticulture, 23-----	--	4	--
Pomology, 24-----	--	--	4
Dairying, 14-----	4	--	--
Elementary Agricultural Chemistry, 46-----	2	2	2
Arithmetic, 53-----	5	--	--
Algebra, 54-----	--	5	5
English, 57-----	3	3	3
Military Drill, 65-----	3	3	3

## Second Year.

Elect seventeen periods from the following :

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock and Stock-judging, 1	3	--	--
Principles of Breeding and Stock-judging, 2	--	3	--
Stock-feeding, 3	--	--	3
Farm Equipment, 4	4	--	--
Soils, 5	--	4	--
Farm Crops, 6	--	--	4
Veterinary Anatomy, 19	4	--	--
Veterinary Medicine, 20	--	4	--
Veterinary Practice, 21	--	--	4
Market Gardening, 25	3	--	--
Forestry, 26	--	3	--
Landscape Gardening, 27	--	--	3
Plant Diseases, 30	3	--	--
Human Physiology, 36	--	3	--
Physiological Botany, 31	--	--	3
Zoology, 35	3	--	3
Zoology (Entomology), 37	--	3	--
Inorganic Chemistry, 39	3	3	3
Inorganic Chemistry (laboratory), 40	2	2	2
Agricultural Chemistry, 45	2	2	2
Wood-work, 50	1	1	--
Forge-work, 51	1	1	--
Mechanical Technology, 52	1	1	--
Farm Machinery, 7	--	--	3
Military Drill, 65	3	3	3

## WINTER COURSES IN AGRICULTURE AND DAIRYING.

**General Statement.**—The Winter Course in Dairying and the Winter Course in Agriculture are designed to meet the wants of young men who are ambitious to excel in their chosen vocation of farming and who feel the need of more and better preparation before taking up their life work. The subjects presented in the two courses are those about which every young farmer should have definite and clear knowledge. In their treatment the topics are handled in such a way as to make the information to the student useful in the highest possible degree.

There is no longer any question concerning the value of advanced, definite knowledge concerning agriculture to those who follow farming; education and training pay on the farm as they do elsewhere in life.

The expenses of the course are so little, and the good to be derived so great, no young man in North Carolina can afford to miss the opportunity of getting this training so necessary in his work. The money necessary to meet the expenses for a whole term's instruction can be earned in a month or two before attending. Therefore no young man, even though he possess but a few dollars, can afford to miss the opportunity for training in his work.

The studies offered are dairying, stock-raising, creamery practice, stock-feeding, diseases of farm animals, dairy-farming, breeding farm animals, entomology, dairy chemistry, farm economics, and book-keeping. The class-room work is supplemented by practice in the creamery, barn, greenhouse, and work-shop.

**Equipment.**—The work in dairying, which includes butter-making, milk-testing, handling cream separators, pasteurizing cream and milk, and dairy bacteriology, is given in the Dairy Building. The building is equipped with separators, milk-testers, pasteurizer, and all tools required in making butter and preparing milk or cream for the city markets.

**Requirements for Admission.**—No entrance examination is required, but the students taking either the Dairy or Winter Course must be at least eighteen years of age and should have a common school education.

**Expenses—College Dues.**—Each student is required to pay a laboratory fee of five dollars. Tuition and instruction are entirely free.

**Other Expenses.**—Books and note paper will cost from two to three dollars, and two white duck suits to wear in the dairy laboratory will cost one dollar each. The suits, however, are not required. Board and room may be secured for \$2.50 per week. The total expenses of the whole ten weeks need not exceed thirty dollars.

### **Ib. The Winter Course in Agriculture and Dairying.**

**Butter-making.**—This course includes all practical operations of creamery management. The student works with the guidance and under the direction of the Instructor at the same operations of butter-making, or pasteurizing, or milk-testing, until proficiency is obtained. He is required to follow the milk from the time it enters the laboratory and creamery until the product leaves it, and to determine the points in processes where losses occur and reasons why they occur. Six periods. Mr. KENDALL.

**Milk and Butter Production.**—This course consists of lectures and recitations on the methods of taking care of milk and the manufacturing of it into other products, also lectures upon construction, equipment and operation of creameries, dairies, and milk depots. Each student is required to draw a plan of a farm dairy and prepare an estimate for equipment of same. Two periods. Professor BURKETT and Mr. KENDALL.

**Feeds and Feeding and Stock-raising.**—This subject consists of an elementary study of the composition of foods; the constituents of feeding, amount, combination and form necessary to give best results with various kinds of live stock.

The student is required to calculate digestibilities and nutritive ratios and to arrange therefrom proper feeding rations. Two periods. Professor BURKETT.

**Dairy Farming.**—Lectures are given under this subject upon the history, adaption, care and management of the different breeds of dairy cattle. Dairy animals are studied by the score card, in accordance with the practice of judging animals for dairy purposes.

Instruction will also be given upon the character of food-stuffs, the relation of food to the animal, and kind and quality of food for the best milk production. Two periods. Professor BURKETT.

**Diseases of Live Stock.**—The lectures on this subject consist of Elementary Veterinary Anatomy and Physiology with special reference to the digestive and reproductive organs and the most common diseases and their treatment. Four periods. Professor BUTLER.

**Soil Study.**—Lectures and recitations upon composition, formation, kinds and physical properties of soil and their improvement by cultivation, natural and artificial fertilizers, drainage, etc.

The work in class-room is supplemented by work in the field and soil physics laboratory. One period. Assistant Professor McCLELLAND.

**Farm Crops.**—In this subject is included rotation of crops, green manuring, and a critical study of corn and cotton; judging of corn; condition of germination and growth; and improvement by selection and breeding. One period. Assistant Professor McCLELLAND.

**Soils and Fertilizers.**—Lectures on fertilizers and fertilizing materials and on the typical classes of North Carolina soils. Two periods, five weeks. Director KILGORE.

**Farm Chemistry.**—Lectures on air, water, the chemistry of plant growth and plant nutrition, and the composition of milk and its products. Two periods, five weeks. Doctor FRAPS.

**Plants.**—This course treats of plants in general, embracing such subjects as plant breeding, seed selection, seed testing, plant propagation and nutrition, classification, plant disease and its prevention, and bacteria and fungi in their relation to farm produce, treating of both the beneficial bacteria of farm operations and the injurious bacteria that produce disease, etc. Two periods. Doctor STEVENS.

**Entomology.**—This is a short course in which the more important noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Two periods. Mr. SHERMAN.

**Book-keeping.**—This subject consists of the practical study of farm accounts, supplemented by numerous original examples and sets for practice. One period. Professor HILL.

**Farm Economics.**—This is an elementary course, dealing with production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. One period. President WINSTON.

## AGRICULTURE.

### Equipment.

The College possesses the following equipment for instruction in Agriculture. The farm includes six hundred acres, with two hundred and fifty acres under cultivation; a large three-story basement barn, 50 by 72 feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay carrier. Just outside the barn are two 70-ton silos. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an eight-horse power Skinner engine. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The Dairy Building contains three rooms and cellar, and is supplied with DeLaval, Sharpless, United States, Empire, National, and Reid Separators, Babcock Testers, various kinds and makes of churns, butter-workers, etc.

The live stock consists of necessary horses and mules, a herd of dairy cattle, a herd of Aberdeen-Angus beef cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.



The poultry-yard is divided into sixteen lots. The buildings consist of incubator cellar, brooder-house, and hen-houses. Several different incubators are used. The poultry-yards contain the following breeds: White Wyandotte, White and Barred Plymouth Rock, Black Minorca, Brown Leghorn, Light Brahmas, and Pekin Ducks.

### Subjects of Instruction.

**1. Breeds of Live Stock.**—Lectures and recitations upon the history, characteristics, care and management, and adaption of the different breeds of live stock. Practical exercises are given in scoring and judging the various kinds of live stock with the score card. Three periods, first term. For Sophomores and second-year students. Professor BURKETT.

**2. Principles of Breeding.**—Lectures and recitations upon the laws of inheritance, and the principles and phenomena of evolution as applicable to the improvement of animals or plants. The aim is to bring every known principle of reproduction to the assistance of the breeder's art. Practical exercise in scoring and judging live stock, and in writing and tracing pedigrees. Three periods, second term. For Sophomores and second-year students. Professor BURKETT.

**3. Stock-feeding and Hygiene.**—Lectures and exercises upon the laws of nutrition, and the character of food-stuffs, and the kind and quality of foods to produce certain results. Practical exercises in calculating digestibility, nutritive ratios, and feeding standards. Three periods, third term. For Sophomores and second-year students. Professor BURKETT.

**4. Farm Equipment.**—Lectures and recitations upon selecting, planning, and equipping farms; planning and erecting farm buildings; farm vehicles and machinery; power, water, and drainage; practical exercise in drawing plans of farms and farm buildings; levelling and laying drains, dynamometer tests of wagons and farm implements, etc. Four hours, first term. For Juniors and second-year students. Assistant Professor McCLELLAND.

**5. Soils.**—Lectures and recitations upon composition, formation, kinds, and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air, and fertilizers, and mechanical analysis. Four hours, second term. For Juniors and second-year students. Assistant Professor McCLELLAND.



**6. Farm Crops.**—Lectures and recitations upon the history, production, harvesting and marketing of farm crops. Practical exercise with growing and dried specimens of farm crops, including grasses, clovers, and other forage crops. Four hours, third term. For Juniors and second-year students. Assistant Professor McCLELLAND.

**7. Farm Machinery.**—Lectures and laboratory work on the tools and machinery of the farm, in reference to their design, construction, draft, durability, and care. The student is required to set up and test the various machines used on the farm. Three hours, third term. For Juniors and second-year students. Assistant Professor McCLELLAND.

**8. Animal Husbandry.**—A critical study of the horse; his breeding and management; gaits; practice in expert judging of horses. Two periods, first term. For Seniors. Professor BURKETT.

**9. Animal Husbandry.**—A critical study of beef and dairy cattle; the breeding, feeding, and management, and practice in expert judging of cattle. Two periods, second term. For Seniors. Professor BURKETT.

**10. Animal Husbandry.**—A critical study of sheep and swine in reference to type, wool or mutton; pork or bacon. The breeding, feeding, and management of sheep and swine, and practical exercise in expert judging sheep and swine. Two periods, third term. For Seniors. Professor BURKETT.

**11. Agronomy.**—A critical study of the farm crops, corn and cotton; judging corn; conditions of germination and growth, and improvement by selection and breeding. Three periods, first term. For Seniors. Assistant Professor McCLELLAND.

**12. Special Crops.**—Special crops will be studied by the student in the laboratory and field. Three periods, second term. For Seniors. Assistant Professor McCLELLAND.

**13. Soil Physics and Management.**—This course is designed for advanced work in the study of soils, both in the laboratory and the field. Three periods, third term. For Seniors. Assistant Professor McCLELLAND.

**14. Dairying.**—Practice and occasional lectures. The course consists in general management of modern dairying, the methods of milk analysis, the bacteriology of milk, the use of separators, the testing of milk, ripening of cream, churning, working, packing and scoring butter. Four periods, third term. For Freshmen. Four periods, first term. For first-year students. Professor BURKETT and Mr. KENDALL.

**15. Dairy Bacteriology.**—A laboratory course in the study of bacteria in its relation to creamery, butter-making, and cheese production. Three periods, first term. For Seniors. Mr. KENDALL.

**16. Experimental Dairying.**—Laboratory practice in making butter and cheese. Three periods, second term. For Seniors. Mr. KENDALL.

**17. Dairy Seminary.**—Laboratory practice in making butter and cheese of special commercial importance. Three periods, third term. For Seniors. Mr. KENDALL.

**18. History of Agriculture and Rural Economics.**—Lectures upon the history of Agriculture; present agricultural methods in various counties, cost and relation, profits of various farm operators and systems. Three periods, third term. For Seniors. Professor BURKETT.

### VETERINARY SCIENCE.

The object of the teaching in this department is not to turn out educated veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live stock. In addition to the work required of all students in the Agricultural courses, as outlined below, the Senior students in the four year course in Agriculture may elect to do three hours a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the Agricultural courses.

**19. Veterinary Anatomy.**—Lectures, illustrated by charts and sketches and, when practicable, by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors and elective for second-year students. Professor BUTLER.

**20. Veterinary Medicine.**—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors and elective for second-year students. Professor BUTLER.

**21. Veterinary Practice.**—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and to perform minor surgical operations under

the direction of the Instructor. Four periods, third term. Required of Juniors and elective for second-year students. Professor BUTLER.

**22. Veterinary Medicine.**—Advanced course in veterinary medicine and surgery with clinical practice. Three periods. For Seniors. Professor BUTLER.

## HORTICULTURE.

### Equipment.

Twenty-three acres of land comprise the Horticultural Experiment farm. There is ample equipment of barns, silos, stock, and machinery. There are five communicating greenhouses, separated by glass partitions so that different night temperatures can be maintained to suit the various purposes to which the houses are devoted. In addition, there is one glass structure, without heat, for the culture of foreign grapes. There is kept a general collection of plants for botanical study and for practice in Floriculture, and in two of the houses winter forcing of vegetables and fruits is carried on, in order that the students may have practice in a line of work that is rapidly assuming commercial importance in the State. The building and greenhouses are heated in the most complete manner by hot water.

The entire basement of Primrose Hall is used as a Horticultural Laboratory, where practice in grafting, potting, and cross fertilization of plants is constantly going on.

### Subjects of Instruction.

**23. Elementary Horticulture.**—Four periods, first term. Required of Freshmen. Four periods, second term. Required of first-year students. Assistant Professor McCLELLAND.

**24. Pomology.**—Four periods, second term. Required of Freshmen. Four periods, third term. Required of first-year students. Assistant Professor McCLELLAND.

**25. Market Gardening.**—Lectures on the theory and practice of growing vegetables in open ground and under glass commercially. Three periods, first term. Elective for Seniors and second-year students.

**26. Forestry.**—Lectures on forest influences and methods of forest management, timbers, and forest products. Three periods, second term. Elective for Seniors and second-year students.

**27. Landscape Gardening.**—Lectures on the history of the garden art and styles of ornamental gardening, planning of country places

and farm-houses, and improvement of grounds in general. Three periods, third term. For Seniors and second-year students.

## BIOLOGY.

### Equipment.

The biological laboratory is equipped with the books, specimens, sterilizers, microscopes, microtomes, and small utensils needed in the prosecution of the work. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds of both weeds and cultivated plants, and most of the important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material, for seed-testing and for conducting physiological experiments.

### Subjects of Instruction.

**28. Elementary Botany.**—Weekly lectures accompanied by laboratory work and reference-reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The student's knowledge is made his own through field-work and independent investigation. Three periods, first and second terms. Required of Freshmen and first-year students. Professor STEVENS.

**29. Systematic Botany and Ecology.**—The student becomes acquainted with the principal orders and families of plants of North Carolina as well as with the general problems of plant classification. More attention is given to the grouping of plants into societies and to the study of plant variation and adaptation than to mere collecting and classifying. The principles of plant breeding, crossing, pollination, budding, and grafting are taught. Three periods, third term. Required of Freshmen and first-year students. Professor STEVENS.

**30. Plant Diseases.**—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores and second-year students. Professor STEVENS.

**31. Physiological Botany.**—Lectures, demonstrations and laboratory work treating of plant nutrition, reproduction, and growth. Especial attention is given to phases of the subject bearing most directly upon plant culture. Three periods, third term. Required of Sophomores and second-year students. Professor STEVENS.

**32. Economic Botany.**—A study of the more important groups of economic plants, weeds and medicinal plants, seed-testing, nitrification, and nitrogen fixation, origin of cultivated plants and of bacteria and fungi in their relation to Agriculture, etc. Two periods, third term. Required of Seniors. Professor STEVENS.

**33. Bacteriology.**—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Three periods, first and second terms. Required of Seniors. Professor STEVENS.

**34. Plant Disease (Advanced).**—Methods of culture and investigation of plant disease. This course is intended to prepare the student for original investigation in plant diseases. Two periods, first term. Elective for Seniors. Professor STEVENS.

**35. Zoology.**—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and reading. Two terms are devoted to vertebrates and invertebrates exclusive of insects. This course is intended to present a general view of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Three periods, first and third terms. Required of Freshmen and second-year students. Professor STEVENS.

**36. Human Physiology.**—Lectures and laboratory work, supplemented by home work and observation, cover the more important features of human physiology and hygiene. Three hours, second term. Required of Sophomores and second-year students. Professor STEVENS.

**37. Entomology.**—Elements of insect structure and classification. Injurious insects and remedies; *a*, of orchards; *b*, of small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade, and ornamental plants; *f*, of barn, mill and household. Three periods, second term. Required of Freshmen. Mr. SHERMAN.



**38. Entomology (Advanced).**—Systematic study of orders and families of insects with special reference to structure, classification, life history and habits. Lectures and laboratory practice. Two periods, second term. For Seniors. Mr. SHERMAN.

### CHEMISTRY.\*

**39. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated with experiments and the exhibition of specimens. Three periods. Required of Sophomores. Elective for second-year students. Professor WITHERS and Doctor FRAPS.

**40. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the Instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Elective for second-year students. Mr. SYME and Mr. FRENCH.

**41. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Required of Juniors. Professor WITHERS.

**42. Analytical Methods.**—A discussion of methods and principles involved in qualitative and quantitative analysis. One period. Elective for Seniors. Doctor FRAPS.

**43. Analytical Chemistry (Introductory).**—Laboratory work. Caldwell's *Chemical Analysis*. The student is taught to detect the presence of the more common elements in unknown substances. He is then given practice in introductory gravimetric and volumetric quantitative work. Six periods, first term. Elective for Seniors. Professor WITHERS and Mr. SYME.

**44. Agricultural Analysis.**—Laboratory work. The work of the student in quantitative analysis is continued, embracing the analysis of those substances more closely related to his work, as fertilizers, feeding-stuffs, milk, butter, etc. Six periods, second and third terms. Elective for Seniors. Professor WITHERS and Mr. SYME.

**45. Agricultural Chemistry.**—A study of the facts obtained by the application of chemistry and chemical methods of investigation

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\*For further information, see courses in Industrial Chemistry.

to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Elective for second-year students. DOCTOR FRAPS.

**46. Agricultural Chemistry (Elementary).**—Two periods. Required of first-year students. Professor WITHERS.

### PHYSICS.\*

**47. Elementary Physics.**—Properties of matter; fundamental units. British and metric standard measures; definitions<sup>m</sup> of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Sophomores. Professor WEIHE.

### DRAWING.†

**48. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Sophomores. Mr. WEBER.

**49. Elementary Mechanical Drawing.**—Use of instruments; geometric drawing; isometric drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Sophomores. Mr. WEBER.

### SHOP-WORK.†

**50. Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. One period, first and second terms. Required of Juniors and second-year students. Mr. BRAGG.

**51. Forge-work.**—Exercises in forging and welding; making exercises of iron; care of forge tools and fires. One period, first and second terms. For Juniors and second-year students. Mr. DEAL.

**52. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; methods of wood-working and forging; care of belting and shafting. One period, first and second terms. For Juniors and second-year students. Mr. BRAGG.

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\* For full information in regard to the Department of Physics, see course in Electrical Engineering.

† For full information in regard to shop-work, drawing, and other Mechanical Engineering subjects, see course in Mechanical Engineering.



**MATHEMATICS.\***

**53. Arithmetic.**—Begin with decimal fractions and complete the subject. Five periods, first term. Milne's *Standard Arithmetic*. Required of first-year students. Mr. MANN and Mr. HOLMES.

**54. Algebra.**—Up to quadratic equations. Wells's *Higher Algebra*. Five periods, second and third terms. Required of first-year students. Mr. MANN and Mr. HOLMES.

**55. Advanced Algebra.**—Wells's *Higher Algebra*. Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of Freshmen. Mr. HOLMES and Mr. FISH.

**56. Geometry.**—Plane and solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of Freshmen. Mr. HOLMES.

**ENGLISH.**

**57. English Composition.**—A drill upon the forms of the language, the correct relation of words, the sentence, and the paragraph. Daily written exercises. Three periods. Required of first-year students. Mr. OWEN.

**58. Introductory Composition and Rhetoric.**—This course in the fundamentals of rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods. Required of Freshmen. Professor HILL and Mr. OWEN.

**59. Rhetoric, Criticism, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Two periods, second term. Professor HILL.

**60. Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

**61. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Required of Sophomores. Professor HILL.

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\* For full information in regard to Mathematics, see course in Civil Engineering.

**62. English Literature.**—The development of English literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two hours, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

## HISTORY.

**63. English History.**—The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

## POLITICAL ECONOMY.

**64. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Seniors. Two periods. President WINSTON.

## MILITARY SCIENCE.

**65. Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three afternoons. Required of all classes. Commandant and officers of the Battalion.

**66. Tactics.**—Theoretical instruction in the Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies, etc. One period. Required of Juniors. Captain PHELPS.

## ENGINEERING COURSES.

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### Four Year Courses in

- II. Civil Engineering,
- III. Mechanical Engineering,
- IV. Electrical Engineering,
- V. Mining Engineering.

### Two Year Courses in

- IIa. Building and Contracting,
- IIIa. Mechanic Arts.

### Winter Course in

- IIb. Road-building.

## COURSE IN CIVIL ENGINEERING.

The aim of the Course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and drafting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in drafting. At the same time it is recognized that a successful engineer requires a well trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in Pure Mathematics and in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this preëminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

## II. The Four Year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91† -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	1	1	1
Forge-work, 97 -----	1	1	1
Mechanical Technology, 102 -----	1	1	1
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Book-keeping, 90 -----	1	1	1
Physics, 112 -----	2	2	2
English, 132 -----	3	3	3
History, 138 -----	2	2	2
Military Drill, 141 -----	3	3	3

### Sophomore Year.

Architecture, 80 -----	2	--	--
Architectural Drawing, 81 -----	2	2	2
Geometry, 85 -----	4	--	--
Trigonometry, 86 -----	--	4	4
Descriptive Geometry, 71 -----	--	2	2
Electricity and Magnetism, 113 -----	2	2	2
Inorganic Chemistry, 127 -----	3	3	3
Inorganic Chemistry (laboratory), 128 -----	2	2	2
English, 133 and 135 -----	2	2	2
Military Drill, 141 -----	3	3	3

\*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 68 and 69 -----	2	2	2
Surveying (field-work), 70 -----	2	2	2
Construction, 77 -----	2	--	--
Mechanics, 89 -----	3	3	3
Drawing, 71 -----	2	2	2
Graphic Statics, 67 -----	--	2	2
Analytical Geometry, 87 -----	4	4	--
Calculus, 88 -----	--	--	4
English and History, 139 and 136 -----	2	2	2
Military Tactics, 142 -----	1	1	1
Military Drill, 141 -----	3	3	3

## Senior Year.

Mechanics of Materials, 78 -----	3	--	--
Construction, 77 -----	--	2	2
Road-building, 79 -----	--	1	1
Roofs and Bridges, 75 -----	3	--	--
Bridge Design, 72 -----	--	3	3
Municipal Engineering, 73 -----	2	2	2
Surveying (field-work), 74 -----	3	3	3
Hydraulics, 76 -----	--	2	2
Calculus, 88 -----	2	--	--
English, 136 and 134 -----	2	2	2
Political Economy, 140 -----	2	2	2
Military Drill, 141 -----	3	3	3

## IIa. The Two Year Course in Building and Contracting.

## First Year.

Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	--
Wood-work, 96 -----	2	2	--
Mechanical Technology, 102 -----	1	1	1
Architecture, 80 -----	2	2	2
Arithmetic, 82 -----	5	--	--
Algebra, 83 -----	--	5	5
Geometry, 85 -----	--	--	4
English, 131 -----	3	3	3
History, 137 -----	2	2	2
Military Drill, 141 -----	3	3	3

## Second Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Construction-----	2	2	2
Drawing-----	2	2	2
Contracts and Specifications-----	2	--	--
Estimates and Bills of Materials-----	--	2	2
Levelling and Use of Instruments-----	--	4	4
Algebra, 84-----	4	--	--
Geometry, 85-----	4	--	--
Trigonometry, 86-----	--	4	4
Book-keeping, 90-----	1	1	1
English, 132-----	3	3	3
Military Drill, 141-----	3	3	3

## IIb. Winter Course in Road-building (January to May).

Surveying-----	--	1	4
Road-building (including the Survey and Location, Materials, Method of Construction, Drainage, Bridges, and Machinery)-----	--	6	6
Drawing-----	--	4	4
Trigonometry-----	--	4	4

## CIVIL ENGINEERING.

## Equipment.

There is a complete equipment of all instruments necessary to civil engineering field-work.

## Subjects of Instruction.

**67. Graphic Statics.**—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil Engineering. Professor RIDDICK.

**68. Surveying.**—Land surveying, levelling, elements of triangulation, topographical surveying, road-making. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil Engineering. Professor RIDDICK.

**69. Railroad Engineering.**—Reconnaissance, preliminary and location surveys, cross-sections, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil Engineering. Professor RIDDICK.

**70. Surveying.**—Field work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, levelling, railroad surveying, working up notes and platting. Two periods. Required of Juniors in Civil Engineering. Mr. FISH.

**71. Drawing.**—Descriptive Geometry, Stereotomy. Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil Engineering. Mr. FISH.

**72. Bridge Design.**—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Three periods, second and third terms. Required of Seniors in Civil Engineering. Mr. FISH.

**73. Municipal Engineering.**—Text book, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

**74. Surveying (Field-work).**—Triangulation and topography, surveys for sewers, water-works, etc. Three periods. Required of Seniors in Civil Engineering. Mr. MANN.

**75. Roofs and Bridges.**—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges*. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Mr. FISH.

**76. Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics*. Two periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

**77. Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

**78. Mechanics of Materials.**—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials*. Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.



**79. Road-building.**—Text-book on construction of roads, streets, and pavements. Lectures on practical road-making in North Carolina. One period, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

### ARCHITECTURE.

**80. Architecture.**—Building materials, method of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

**81. Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. MANN.

### MATHEMATICS.

**82. Arithmetic.**—Milne's *Standard Arithmetic*. Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students in Mechanic Arts. Mr. HOLMES and Mr. MANN.

**83. Algebra.**—Wells's *Higher Algebra*. Up to quadratic equations. Five periods, second and third terms. Required of first-year students in Mechanic Arts. Mr. HOLMES and Mr. MANN.

**84. Advanced Algebra.**—Wells's *Higher Algebra*. Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of all Freshmen and of second-year students in Mechanic Arts. Mr. FISH and Mr. HOLMES.

**85. Geometry.**—Plane and Solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of all Freshmen and of second-year students in Mechanic Arts. Four periods, first term. Required of Sophomores. Mr. YATES.

**86. Trigonometry.**—Four periods, second and third terms. Required of Sophomores. Mr. YATES.

**87. Analytical Geometry.**—Nichols's *Analytical Geometry*. Conic sections, higher plane curves, Geometry of three dimensions. Four periods, first and second terms. Required of Juniors. Mr. YATES.

**88. Calculus.**—Osborne's *Elements of Calculus*. Differential and integral, elements of differential equations. Four periods, third term. Required of Juniors. Two periods, first term. Required of Seniors. Professor RIDDICK.

**89. Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors. Professor RIDDICK and Mr. FISH.

**90. Book-keeping.**—The work in the text-books supplemented by numerous original examples and sets for practice. One period. Required of Freshmen. Mr. YATES.

### COURSES IN MECHANICAL ENGINEERING AND MECHANIC ARTS.

The regular Four Year Course in Mechanical Engineering is intended to fit the student for positions of responsibility in engineering work, and also to furnish him with a basis to carry on more advanced engineering studies. It treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers and engines.

The Two Year Course is offered to students who wish to become machinists, draughtsmen, or stationary engineers.

**III. The Four Year Course in Mechanical Engineering,** leading to the degree of Bachelor of Engineering.

#### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	1	1	1
Forge-work, 97 -----	1	1	1
Mechanical Technology, 102 -----	1	1	1
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Physics, 112 -----	2	2	2
English, 132 -----	3	3	3
History, 138 -----	2	2	2
Book-keeping, 90 -----	1	1	1
Military Drill, 141 -----	3	3	3

## Sophomore Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 93 -----	2	2	2
Forge-work, 98 -----	1	--	--
Pattern-making, 99 -----	--	1	1
Mechanical Processes, 103 -----	1	1	1
Geometry, 85 -----	4	--	--
Trigonometry, 86 -----	--	4	4
Electricity and Magnetism, 113 -----	2	2	2
Inorganic Chemistry, 127 -----	3	3	3
Inorganic Chemistry (laboratory), 128 -----	2	2	2
English, 133 and 135 -----	2	2	2
Military Drill, 141 -----	3	3	3

## Junior Year.

Steam-engine, 104 -----	2	2	2
Mechanics, 89 -----	3	3	3
Machine Design, 94 -----	2	2	2
Machinists' Work, 100 -----	2	2	2
Analytical Geometry, 87 -----	4	4	--
Calculus, 88 -----	--	--	4
Dynamo Machinery, 116 -----	2	2	2
English and History, 139 and 136 -----	2	2	2
Military Tactics, 142 -----	1	1	1
Military Drill, 141 -----	3	3	3

## Senior Year.

Calculus, 88 -----	2	--	--
Hydraulics, 76 -----	--	2	2
English or Political Economy, 136 and 134 or 140 -----	2	2	2
Mechanical Engineering (laboratory), 108 -----	1	1	1
Machinists' Work, 101 -----	3	3	2
Boiler and Engine Design, 95 -----	4	4	4
Principles of Mechanism, 106 -----	--	3	2
Industrial Chemistry, 129 -----	--	--	2
Mechanics of Materials, 78 -----	3	--	--
Boilers and Engines, 105 -----	2	2	2
Military Drill, 141 -----	3	3	3

## IIIa. The Two Year Course in Mechanic Arts.

## First Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	2	2	2
Forge-work, 97 -----	1	1	1
Arithmetic, 82 -----	5	--	--
Algebra, 83 -----	--	5	5
English, 131 -----	3	3	3
History, 137 -----	2	2	2
Mechanical Technology, 102 -----	1	1	1
Military Drill, 141 -----	3	3	3

## Second Year.

Mechanical Drawing, 109 -----	3	3	3
Machinists' Work, 107 -----	3	3	3
Drawing, 109, or Machinists' Work, 101 --	4	4	4
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Mechanical Technology, 110 -----	2	2	2
Engines and Boilers, 111 -----	2	2	2
Military Drill, 141 -----	3	3	3

## MECHANICAL ENGINEERING.

## Equipment.

The drawing and recitation rooms, laboratory and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are a recitation room, engineering laboratory, machine shop, forge shop, wood-turning shop, and carpenter shop. On the second floor are the office, three drawing-rooms, and a library. In the latter are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required.

The laboratory is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two horse-power engine, a ten horse-power engine (both of which were built by students), a twenty-five horse-power Woodbury engine, a large Wheeler surface condenser, connected with a  $4\frac{1}{2} \times 6 \times 6$  Blake air-pump, an Ericsson hot-air pumping engine, apparatus for making analyses of flue gases, a fuel calorimeter, a large Sturtevant fan and engine, a small water motor, a Worthington water-meter, a complete Westinghouse air-brake equipment, a complete New York air-brake equipment, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, and other apparatus for making tests.

In addition to the laboratory, there is a boiler-house equipped with one thirty horse-power, and two forty horse-power horizontal return tubular boilers, and two seventy-five horse-power Babcock and Wilcox boilers, several pumps, and a jet condenser, all of which are available for experimental purposes.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a  $6\frac{1}{2}$ -inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 30-inch band saw; a large jig saw; a shaper or edge moulding machine, with a very complete set of moulding cutters; a 38-inch grindstone; a wood trimmer; an adjustable mitre-box; a steam glue-heater and a large assortment of screw and of bar clamps, both iron and wooden.

The forge shop is a well lighted and ventilated, neatly paved room,  $30 \times 40$  feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis and Eagan lathe with 10-foot bed, a 14-inch Windsor lathe with 5-foot bed, a 13-inch

Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with 4-foot bed, a 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, a Brown and Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, a large emery tool-grinding machine, a small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe threading and cutting machine. The machines have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by a twenty-five horse-power Woodbury engine. When the shops are running one of the students has charge of the engine.

### Subjects of Instruction.

**91. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of all Freshmen and first-year students in Mechanic Arts. Mr. WEBER.

**92. Elementary Mechanical Drawing.**—Use of instruments, geometric drawing, isometric drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of all Freshmen and first-year students in Mechanic Arts. Mr. WEBER.

**93. Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. CHITTENDEN.

**94. Machine Design.**—Calculations and working drawings of machine parts, such as fastenings, shafting, hangers, couplings, bearings, belt and tooth gearing, pulleys, and pipe couplings. Two periods. Required of Juniors in Mechanical Engineering. Mr. CHITTENDEN.

**95. Boiler and Engine Design.**—Calculations and working drawings of types of engines, boilers, pumps, condensers. Outline of power plant design. Four periods. Required of Seniors in Mechanical Engineering. Professor DICK.

**96. Wood-work.**—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. One period. Required



of Freshmen. Two periods. Required of first-year students in Mechanic Arts. Mr. BRAGG.

**97. Forge-work.**—Exercises in working with iron. Welding. Uses and care of forge tools and fires. One period. Required of Freshmen and first-year students in Mechanic Arts. Mr. DEAL.

**98. Forge-work.**—Exercises in working with steel. Tempering. Case-hardening. One period, first term. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. DEAL.

**99. Pattern-making.**—Exercise in making patterns of machine parts. One period, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. BRAGG.

**100. Machinists' Work.**—Bench and machine-work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Seven periods. Required of second-year students in Mechanic Arts. Mr. PARK.

**101. Machinists' Work.**—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Three periods, first and second terms; two periods, third term. Required of Seniors in Mechanical Engineering. Mr. PARK.

**102. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Care of belting and shafting. One period. Required of Freshmen and of first-year students in Mechanic Arts. Mr. BRAGG.

**103. Mechanical Processes.**—Description of machines used in engineering work. Methods of pattern-making, moulding, casting, and heavy forging. Description of various machine tools and methods of performing work on them; boiler-making and plate-work. One period. Required of Sophomores in Mechanical and Mining Engineering. Mr. CHITTENDEN.

**104. Steam-engine.**—Descriptive study of the simple steam-engine. Names and uses of the various parts of an engine. Various types of engines, fittings, foundations, and piping. Different types of boilers and settings. Arrangement of power plants. Care of engines and boilers. Two periods. Required of Juniors in Mechanical and Mining Engineering. Two periods, first and second terms. Required of Seniors in Electrical Engineering. Professor DICK.

**105. Boilers and Engines.**—Description and theory of boilers and engines, valve gears. Elementary thermodynamics. Principles in-



volved in engine and boiler design. Two periods. Required of Seniors in Mechanical Engineering. Professor DICK.

**106. Principles of Mechanism.**—Study of the communication of motion by gear-wheels, cams, screws, belts, and link-work; automatic feed motions; epicyclic trains; parallel and quick return motions. Problems. Three periods, second term; two periods, third term. Required of Seniors in Mechanical Engineering. Professor DICK.

**108. Mechanical Engineering Laboratory.**—Practice in engine and boiler-running; valve-setting; calibration of instruments; testing gauges, and lubricants. Use of indicators and calorimeters. Tests of boilers and engines. One period. Required of Seniors in Mechanical Engineering. Professor DICK and Mr. CHITTENDEN.

**109. Mechanical Drawing.**—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blue-printing. Three periods. Required of second-year students. Professor DICK.

**110. Mechanical Technology.**—Classification and use of hand-tools and machines usually found in the pattern shop, foundry, and machine shop. Materials used and methods of carrying on work in these shops. Practical problems in estimating cost and material required to complete a piece of work; arrangements and sizes of belting, pulleys, and shafting. Two periods. Required of second-year students. Mr. CHITTENDEN.

**111. Engines and Boilers.**—Descriptive study of ordinary engines and boilers; proper methods of handling them. Care of pumps, condensers, engine and boiler fittings. Actual practice in engine-tending, boiler-firing, and dynamo-tending is also given with this course. Two periods. Required of second-year students. Mr. CHITTENDEN.

## COURSE IN ELECTRICAL ENGINEERING.

**Object.**—The work in this department is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior year a course in designing the various electrical machines is given.

**IV. The Four Year Course in Electrical Engineering,** leading to the degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	1	1	1
Forge-work, 97 -----	1	1	1
Mechanical Technology, 102 -----	1	1	1
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Book-keeping, 90 -----	1	1	1
Elementary Physics, 112 -----	2	2	2
English, 132 -----	3	3	3
History, 138 -----	2	2	2
Military Drill, 141 -----	3	3	3

### Sophomore Year.

Mechanical Drawing, 93 -----	2	2	2
Geometry, 85 -----	4	--	--
Trigonometry, 86 -----	--	4	4
Inorganic Chemistry, 127 -----	3	3	3
Inorganic Chemistry (laboratory), 128 -----	2	2	2
Forge-work, 98 -----	1	--	--
Pattern-making, 99 -----	--	1	1
Physical Laboratory, 114 -----	1	1	1
Electricity and Magnetism, 113 -----	2	2	2
English, 133 and 135 -----	2	2	2
Military Drill, 141 -----	3	3	3

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Dynamo Machinery, 116-----	2	2	2
Electrical Laboratory, 115-----	2	--	--
Electrical Engineering (laboratory), 120--	--	2	2
Machinists' Work, 100-----	2	2	2
Mechanics, 89-----	3	3	3
Analytical Geometry, 87-----	4	4	--
Calculus, 88-----	--	--	4
Machine Design, 94-----	2	2	2
English and History, 139 and 136-----	2	2	2
Military Tactics, 142-----	1	1	1
Military Drill, 141-----	3	3	3

## Senior Year.

Alternating Currents, 117-----	3	--	--
Light and Power Plants, 118-----	--	3	--
Telephony and Telegraphy, 119-----	--	--	3
Electrical Engineering (laboratory), 121--	4	4	4
Dynamo Design, 122-----	1	2	2
Steam-engine, 104-----	2	2	--
Mechanical Engineering (laboratory), 108--	1	--	--
Industrial Chemistry, 129-----	--	--	2
Calculus, 88-----	2	--	--
Hydraulics, 76-----	--	2	2
Political Economy, 140-----	2	2	2
Military Drill, 141-----	3	3	3
English Literature, 136 and 134-----	2	2	2

## PHYSICS.

## Equipment.

The recitation rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

### Subjects of Instruction.

**112. Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**113. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Sophomores. Professor WEIHE.

**114. Physical Laboratory.**—Measurements of length, area, and volume; determinations of density; laws of forces and velocities; pendulum. Two periods. Required of Sophomores in Electrical Engineering. Mr. WALTER.

**115. Electrical Laboratory.**—Electric and magnetic measurements. Two periods, first term. Required of Juniors in Electrical Engineering. Mr. WALTER.

## ELECTRICAL ENGINEERING.

### Equipment.

The electrical engineering laboratory is a small brick building 30x50. It contains the electric light plant, consisting of a 35-horse-power automatic Skinner engine, a 11.5 K. W. 110-volt Westinghouse dynamo and a 20 K. W. 2-phase 110-volt Lincoln alternator. The laboratory contains in addition to this one 6-light T. H. arc machine, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens and Halske dynamo, connected in such a way as to give 3-phase currents, one 2-horse-power 3-phase 110-volt Gen. Elect. Co. motor, one 2 K. W. 110-volt LaRoche alternator. It also contains transformers, condensers, arc lamps, circuit breakers, etc.

The department possesses a small library of standard books on all branches of physics and electrical engineering.

### Subjects of Instruction.

**116. Dynamo Machinery.**—Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Professor WEIHE.

**117. Alternating Currents of Electricity.**—Alternating current generators and motors. Static and rotary transformers. Condensers.

Three periods, first term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**118. Electric Light and Power Plants.**—Storage batteries. Transmission of electric power. Three periods, second term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**119. Telephony and Telegraphy.**—Three periods, third term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**120. Electrical Engineering Laboratory.**—Standardizing of measuring instruments. Measurements of power. Characteristic curves. Two periods, second and third terms. Required of Juniors in Electrical Engineering. Mr. WALTER.

**121. Electrical Engineering Laboratory.**—Efficiency tests of direct and alternating current dynamos and motors and of transformers. Efficiency tests of electric plants. Photometry. Four periods. Required of Seniors in Electrical Engineering. Mr. WALTER.

**122. Dynamo Design.**—Design of dynamos, motors, and transformers. One period, first term; two periods, second and third terms. Required of Seniors in Electrical Engineering. Professor WEIHE and Mr. WALTER.

### COURSES IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore-dressing, metal-working, ventilation, drainage, and illumination of mines.

Students wishing to specialize in Metallurgy will please see Courses in Industrial Chemistry.

**V. The Four Year Course in Mining Engineering,** leading to the degree of Bachelor of Engineering.

**Freshman Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 91 -----	2	--	--
Mechanical Drawing, 92 -----	--	2	2
Wood-work, 96 -----	1	1	1
Forge-work, 97 -----	1	1	1
Mechanical Technology, 102 -----	1	1	1
Algebra, 84 -----	4	4	--
Geometry, 85 -----	--	--	4
Book-keeping, 90 -----	1	1	1
Physics, 112 -----	2	2	2
English, 132 -----	3	3	3
History, 138 -----	2	2	2
Military Drill, 141 -----	3	3	3

**Sophomore Year.**

Mechanical Drawing, 93 -----	2	2	2
Forge-work, 98 -----	1	--	--
Pattern-making, 99 -----	--	1	1
Mechanical Processes, 103 -----	1	1	1
Geometry, 85 -----	4	--	--
Trigonometry, 86 -----	--	4	4
Electricity and Magnetism, 113 -----	2	2	2
Inorganic Chemistry, 127 -----	3	3	3
Inorganic Chemistry (laboratory), 128 -----	2	2	2
English, 133 and 135 -----	2	2	2
Military Drill, 141 -----	3	3	3

**Junior Year.**

Geology and Mineralogy, 126 -----	4	4	4
Construction, 77 -----	2	2	2
Steam-engine, 104 -----	2	2	2
Mechanics, 89 -----	3	3	3
Analytical Geometry, 87 -----	4	4	--
Calculus, 88 -----	--	--	4
English and History, 139 and 136 -----	2	2	2
Military Tactics, 142 -----	1	1	1
Military Drill, 141 -----	3	3	3

## Senior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Mining, 123-----	3	5	5
Ore Deposits, 124-----	---	3	3
Ore Dressing, 125-----	3	---	---
Metallurgy, 130-----	3	3	3
Hydraulics, 76-----	---	2	2
Surveying, 68-----	2	---	---
Surveying (field-work), 70-----	2	---	---
English, 136 and 134-----	2	2	2
Political Economy, 140-----	2	2	2
Military Drill, 141-----	3	3	3

## MINING ENGINEERING.

**123. Mining.**—Lectures on methods of mining, including prospecting, sinking, stoping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Three periods, first term; five periods, second and third terms. For Seniors in Mining Engineering.

**124. Ore Deposits.**—A discussion of the general features and the formation of ore bodies, followed by a description of the deposits of iron, copper, lead, zinc, silver, gold, and the lesser metals, and the occurrence of coal, petroleum, natural gas, asphalt, building stones, etc., with special reference to North America. Three periods, second and third terms. For Seniors in Mining Engineering.

**125. Ore Dressing.**—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Three periods, first term. For Seniors in Mining Engineering.

**126. Mineralogy and Geology.**—A discussion of the elements of these subjects. Four periods. For Juniors in Mining Engineering.

## CHEMISTRY.

**127. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the



science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Dr. FRAPS.

**128. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. SYME.

**129. Industrial Chemistry.**—A discussion of the materials of engineering. Two periods, third term. Required of Seniors in Mechanical and Electrical Engineering. Professor WITHERS.

**130. Metallurgy.**—A study of fuel and its uses; iron and steel, copper, lead, gold, and silver, their properties, tests; ores and details of methods of reduction. Three periods. For Seniors in Mining Engineering.

### ENGLISH.

**131. English Composition.**—A drill upon the forms of the language, the correct relation of words, the sentence, the paragraph. Daily written exercises. Three periods. Required of first-year short course students. Mr. OWEN.

**132. Introductory Composition and Rhetoric.**—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL and Mr. OWEN.

**133. Rhetoric, Criticisms, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Two periods, second term. Professor HILL.

**134. Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

**135. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand.

Synopses, paraphrases, and critiques required. Two periods, third term. Required of Sophomores. Professor HILL.

**136. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of all Seniors. Professor HILL.

### HISTORY.

**137. American History.**—By means of a text-book supplemented by lectures and frequent assignment of topics for special study, students are in this course familiarized with the leading facts in the history of the United States. Two periods. Required of first-year students. Professor PHELPS.

**138. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**139. English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

### POLITICAL ECONOMY.

**140. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Two periods. Required of Seniors. President WINSTON.

### MILITARY SCIENCE.

**141. Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**142. Tactics.**—Theoretical instruction in the Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies, etc. One period. Required of Juniors. Captain PHELPS.

## **COURSES IN INDUSTRIAL CHEMISTRY.**

### **VI. The Four Year Course in Industrial Chemistry.**

#### **COURSES IN CHEMISTRY.**

In harmony with the general purposes for which the College was founded, the courses in chemistry are arranged to prepare young men for careers in the analytical or the operating departments of the various chemical industries. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in the applied chemical subjects bearing more directly on the course the student has selected. The fundamental principles of engineering, machinery, etc., which are almost indispensable to the successful management of chemical plants, are taught, together with the cultural studies included in the other courses.

#### **Raleigh as a Chemical Centre.**

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and artificial ice; for the extraction of cotton-seed oil; for the dyeing of cotton goods and for the tanning and dressing of leather.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station are located in Raleigh, and through the courtesy of the officials in charge of these departments our students are welcomed whenever they desire to visit them.

The Berzelius Chemical Society—composed of the professional chemists residing in Raleigh and its vicinity—invites the students of this College to attend all meetings.

The State Museum is open to the public each day from 9 o'clock A. M. to 5 o'clock P. M., and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

#### **Chemical Equipment.**

The laboratories of general and of analytical chemistry are located in the main building of the College, and are well furnished. The

tables are of yellow heart pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate seventy students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

### Dyeing Equipment.

The Dyeing Department is now permanently located in the basement of the new Textile Building. Here there is devoted to this work an experimental dyeing laboratory, a large dye house 70x50; a lecture room, an office and a stock-room.

The experimental dyeing laboratory is fitted up to accommodate thirty students and contains all the necessary conveniences, including dye baths heated by indirect steam coils, enabling the student to carry out six dye trials at once and giving uniform conditions when desired.

The dye house is being equipped with dyeing, bleaching, and mercerizing machinery for handling the material in all of its different forms. Already through the kindness of the different manufacturers, some donations have been made to this department and it is expected that the dye-house will be shortly equipped with the most approved machines.

Through the kindness of the dyestuff dealers a complete line of dyestuffs has been furnished the College and all the latest dyes are regularly sent.

On account of the rapidly increasing demand on the part of our cotton mills for dyers who are familiar not only with the practical operations of the dye-house, but with the principles underlying these operations, the Industrial Chemical Course is arranged so that students who desire to do so may devote special attention to the study of dyeing during their Junior and Senior years.

### Graduates in Chemistry.

The chemical graduates of the College are engaged in the following lines of chemical work: Manufacture of illuminating gas, manufacture of sulphuric acid, manufacture of fertilizers, manufacture of tobacco products, refining and testing of oils, metallurgy of iron,

metallurgy of copper, dyeing of cotton goods, in agricultural experiment stations, in State departments of agriculture, and in teaching chemistry. These are employed in North Carolina and seven other States.

**VI. The Four Year Course in Industrial Chemistry, leading to the degree of Bachelor of Science.**

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 165† -----	2	--	--
Mechanical Drawing, 166 -----	--	2	2
Wood-work, 168 -----	1	1	1
Forge-work, 169 -----	1	1	1
Mechanical Technology, 172 -----	1	1	1
Algebra, 177 -----	4	4	--
Geometry, 178 -----	--	--	4
Book-keeping, 183 -----	1	1	1
English, 184 -----	3	3	3
History, 189 -----	2	2	2
Physics, 159 -----	2	2	2
Military Drill, 192 -----	3	3	3

### Sophomore Year.

Inorganic Chemistry, 143 -----	3	3	3
Inorganic Chemistry (laboratory), 144 -----	2	2	2
Electricity and Magnetism, 160 -----	2	2	2
Physical Laboratory, 161 -----	1	1	1
Mechanical Drawing, 167 -----	2	2	2
Geometry, 178 -----	4	--	--
Trigonometry, 179 -----	--	4	4
English, 185 and 187 -----	2	2	2
Military Drill, 192 -----	3	3	3
ELECTIVE.			
A and C { Forge-work, 170 ----- { Pattern-making, 171 ----- or B, Carding and Spinning, 158 ----- }	1	1	1

\*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

**Junior Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 145-----	2	2	2
Analytical Methods, 147-----	1	1	1
Analytical Chemistry (laboratory), 148---	6	--	--
Technical Chemical Analysis, 149-----	--	6	6
English and History, 190 and 188-----	2	2	2
Political Economy, 191-----	2	2	2
Military Tactics, 193-----	1	1	1
Military Drill, 192-----	3	3	3
Elective: Group A or Group B-----	4	4	4

**GROUP A.**

Dynamo Machinery, 163-----	2	2	2
Electrical Laboratory, 162-----	2	--	--
Electrical Engineering Laboratory, 164---	--	2	2

**GROUP B,**

FOR STUDENTS WISHING TO SPECIALIZE IN DYEING.

Dyeing, 153-----	2	2	2
Dyeing Laboratory, 154-----	2	2	2

**Senior Year.**

Industrial Chemistry, 151-----	2	2	2
Technical Chemical Analysis, 149-----	--	6	6
English, 188 and 186-----	2	2	2
Military Drill, 192-----	3	3	3
Elective: From A, B or C-----	13	7	7

**GROUP A.**

Organic Chemistry (laboratory), 146-----	6	--	--
Steam-engine, 172-----	2	2	2
Elective-----	5	5	5



**GROUP B,**

FOR STUDENTS WISHING TO SPECIALIZE IN DYEING.

Dyeing, 156-----	2	2	2
Dyeing Laboratory, 157-----	5	5	5
Organic Chemistry (laboratory), 146-----	6	--	--

**GROUP C,**

FOR STUDENTS WISHING TO SPECIALIZE IN METALLURGY.

Ore Dressing, 175 -----	3	--	--
Assaying, 150 -----	3	--	--
Metallurgy, 152 -----	3	3	3
Geology and Mineralogy, 175 -----	4	4	4

**CHEMISTRY.\***

**143. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor FRAPS.

**144. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. SYME.

**145. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. For Juniors. Professor WITHERS.

**146. Organic Chemistry.**—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry*, translated by Shoer. This work is designed to familiarize the student with the more important organic compounds and with the processes involved in their preparation. Six periods, first term. For Seniors.

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\*For Agricultural Chemistry see Agricultural Courses.



**147. Analytical Methods.**—A discussion of methods and principles involved in qualitative and quantitative analysis. One period. Required of Juniors. Doctor FRAPS.

**148. Analytical Chemistry (Introductory).**—Laboratory work. Caldwell's *Chemical Analysis*. The student is taught to detect the presence of the more common elements in unknown substances. He is given practice in introductory gravimetric and volumetric quantitative work. Six periods, first term. Required of Juniors. Professor WITHERS and Mr. SYME.

**149. Technical Analysis.**—Laboratory work. The work of the student is continued in quantitative analysis, special attention being given to the analysis of those substances most closely connected with the course of the student. Six periods, second and third terms. Required of Juniors. Five periods, second and third terms. Required of Seniors. Professor WITHERS and Mr. SYME.

**150. Assaying.**—Practice work in the assaying of gold, silver, and lead ores by furnace methods. Three periods, first term. For Seniors.

**151. Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry*. A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of Engineering. Two periods. Required of Seniors. Professor WITHERS.

**152. Metallurgy.**—A study of fuel and its uses; iron and steel, copper, lead, gold and silver, their properties, tests, ores, and details of methods of reduction. Three periods. For Seniors.

## DYEING.

**153. Dyeing.**—Lectures. A study of the chemistry of the textile fibers, and the principles involved in bleaching, dyeing, and printing. The student becomes acquainted with the methods and machinery for dyeing cotton, wool, silk, and mixed goods, and learns the most important dyes now in use. Reference book, Fraps's *Principles of Dyeing*. Two periods. For Juniors. Mr. FRENCH.

**154. Dyeing.**—Laboratory work. The experiments are designed to accompany Course 153. Working with small skeins of yarns, the student learns different methods of dyeing, applies a number of dyes, tests their fastness to washing, and other agencies, and applies other tests. All dyed skeins and fastness tests are entered in suitable scrap-books. Two periods. For Juniors. Mr. FRENCH.

**155. Chemistry of Dye-stuffs.**—Nietzski's *Chemistry of the Organic Dye-stuffs*. A study of the chemical composition of dye-stuffs, and the processes involved in their manufacture. Two periods. For Seniors. Mr. FRENCH.

**156. Dyeing.**—Lectures. A further study of the properties and modes of application of dye-stuffs and mordants, especially those applied to cotton. Detailed study is made of certain important methods of dyeing cotton, as indigo, turkey red, aniline black, etc. Two periods. For Seniors. Mr. FRENCH.

**157. Dyeing Laboratory.**—Involves the bleaching and dyeing of cotton in the dye-house, dyeing to a given shade, mixing of dyes, and practical dyeing tests. The student learns how to study a new dye and devise methods for its practical application. Three periods. For Seniors. Mr. FRENCH.

### CARDING AND SPINNING.\*

**158. Carding and Spinning.**—Introductory work intended to give the student an introduction to the machines and methods of operating. One period. For Sophomores. Professor WILSON.

### PHYSICS.†

**159. Elementary Physics.**—Properties of matter; fundamental units. British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**160. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Freshmen. Professor WEIHE.

**161. Physical Laboratory.**—Measurements of length, area, and volume; determinations of density; laws of forces and velocities; pendulum. One period. Required of Sophomores. Mr. WALTER.

**162. Electrical Laboratory.**—Electric and magnetic measurements. Two periods, first term. For Juniors. Mr. WALTER.

### ELECTRICAL ENGINEERING†.

**163. Dynamo Machinery.**—Practical units. Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two periods. For Juniors. Professor WEIHE and Mr. WALTER.

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\*For further information see outline of Textile Courses.

†For full information see Course in Electrical Engineering.

**164. Electrical Engineering Laboratory.**—Standardizing of measuring instruments. Measurements of power. Characteristic curves. Two periods, second and third terms. For Juniors. Mr. WALTER.

### MECHANICAL ENGINEERING.†

**165. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. WEBER.

**166. Elementary Mechanical Drawing.**—Use of instruments, geometric drawing, isometric drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Freshmen and first-year students. Mr. WEBER.

**167. Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores. Mr. CHITTENDEN.

**168. Wood-work.**—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. One period. Required of Freshmen. Mr. BRAGG.

**169. Forge-work.**—Exercises in working with iron. Welding. Uses and care of forge tools and fires. One period. Required of Freshmen. Mr. DEAL.

**170. Forge-work.**—Exercises in working steel. Tempering, case-hardening. One period, first term. For Sophomores. Mr. DEAL.

**171. Pattern-making.**—Exercises in making patterns of machine parts. One period, second and third terms. For Sophomores. Mr. BRAGG.

**172. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; methods of wood-working and forging; care of belting and shafting. One period. Required of Freshmen. Mr. BRAGG.

**173. Steam-engine.**—Descriptive study of the simple steam-engine; names and use of the various parts of an engine; various types of engines and fittings, foundations, and piping; different types of boilers and settings; arrangement of power plants; care of engines and boilers. Two periods. For Seniors. Professor DICK.

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†For full information see Course in Mechanical Engineering.

## MINING ENGINEERING.

**175. Ore-dressing.**—Furnishing products for metallurgical treatment. Lectures on concentrating machinery, and the concentrating and crushing of ores by mechanical processes. Three periods, first term. For Seniors.

**176. Mineralogy and Geology.**—A discussion of the elements of these subjects. Four periods. For Seniors.

## MATHEMATICS.

**177. Advanced Algebra.**—Wells's *Higher Algebra*. Begins at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of Freshmen. Mr. FISH and Mr. HOLMES.

**178. Geometry.**—Plane and Solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of all Freshmen in full courses, and second-year students in Mechanic Arts. Four periods, first term. Required of Sophomores. Mr. YATES.

**179. Trigonometry.**—Four periods, second and third terms. Required of Sophomores. Mr. YATES.

**180. Analytical Geometry.**—Nichols's *Analytical Geometry*. Conic sections, higher plane curves, Geometry of three dimensions. Four periods, first and second terms. For Seniors. Mr. YATES.

**181. Calculus.**—Osborne's *Elements of Calculus*. Differential and integral, elements of differential equations. Four periods, third term. For Seniors. Professor RIDDICK.

**182. Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. For Seniors. Professor RIDDICK and Mr. FISH.

**183. Book-keeping.**—The work in the text-books supplemented by numerous original examples and sets for practice. One period. Required of all Freshmen. Mr. YATES.

## ENGLISH.

**184. Introductory Composition and Rhetoric.**—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy,

and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL and Mr. OWEN.

**185. Rhetoric, Criticism, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Two periods, second term. Professor HILL.

**186. Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

**187. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Required of Sophomores. Professor HILL.

**188. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

## HISTORY.

**189. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**190. English History.**—The first term of the Junior year is devoted to the study of English History. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

## POLITICAL ECONOMY.

**191. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. For Juniors. Two periods. President WINSTON.

**MILITARY SCIENCE.**

**192. Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**193. Tactics.**—Theoretical instruction in the Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies, etc. One period. Required of Juniors. Captain PHELPS.



## TEXTILE COURSES.

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VII. The Four Year Course in Textile Industry.

VIIa. The Two Year Course in Textile Industry.

### THE TEXTILE DEPARTMENT.

The Department of Textile Industry, or Textile Department, as it is generally known, is located in a new building recently erected for its use. Instruction is given there in theoretical and practical cotton manufacturing. The student is taught the theory of spinning, weaving, designing, and dyeing. He learns how to produce different kinds of cotton goods, such as yarns, plain and fancy cotton cloths. The practical details of manufacturing must be learned, as the students perform all the work in connection with the operation of the machinery, setting and fixing it so as to produce the desired result. The building is equipped with carding and spinning machinery for producing cotton yarns from the bale, and looms of different kinds for weaving all grades of fabrics from sheeting to figured brocade work.

### TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the Four Year Course, leading to the degree of Bachelor of Engineering, and the Short Course. The Four Year Course combines with the textile instruction certain practical and theoretical subjects which enable the student to understand better his special work. The textile instruction begins in the Sophomore year and is the principal work of the Junior and Senior years. The Short Course is offered to those mature students who cannot spend the time required for the Four Year Course. To be successful in the Short Course the student should have had a good preparation in his early studies, especially in mathematics, and some practical experience. To enter this course the student is required to pass the full entrance examinations for the Freshman Class in College, and must satisfy the professor in charge of his ability to go on with the work. Combined with the textile instruction are certain practical subjects which aim to increase the skill of the student.

The textile instruction given is of a practical nature, and covers the entire ground of cotton manufacturing. Its object is to prepare the



student for a useful career in this industry. There is a demand from the mills in this and other States for young men technically trained in the manufacture of cotton goods, especially of the finer grades. In addition to the textile instruction there are also in this course other practical studies. That the graduates are meeting with success in this industry is shown by the positions held by them. Among these are president, secretary and treasurer, manager, superintendent, designer, overseer of weaving, mill architect, machinery salesman. In fact, the graduates have gone into almost every branch of cotton manufacturing and have met with success. All have received the same training; the point to which each has advanced has depended upon the ability to deal with the general problems of manufacturing.

### TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus, just beyond the Horticultural Building. It is a two-story brick building 125x75 feet, with a basement, erected from the plans of The D. A. Tompkins Co., Charlotte, N. C. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class-room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton mill machinery manufactured by American builders. The following is a list of the machines and their makers:

#### Carding Department.

**Opening-room.**—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

**Carding-room.**—One 40-inch revolving flat card, 110 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whittin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats with coiler, made by Saco and Pettie Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather

rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head with coiler, metallic rolls, and improved evener motion, made by Saco and Pettie Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettie Machine Shops, Newton Upper Falls, Mass. One 36-spindle slubber for 11x5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9x4½-inch bobbin, made by Saco and Pettie Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7x3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6x2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

### Spinning Department.

**Spinning-room.**—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp; one 64-spindle spinning frame for filling, made by Saco and Pettie Machine Shops, Biddeford, Me.

**Spooling, Twisting, and Winding.**—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 72-spindle twister, one-half for wet, one-half for dry twisting, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine, Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 50-spindle reel, made by Draper Co., Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One 12-spindle bobbin winding machine, made by W. W. Altemus & Son, Philadelphia, Pa.

### Weaving Department.

**Warp Preparation.**—One section warper, 400 ends, made by Draper Company, Hopedale, Mass. One beaming machine, made by Lewiston Machine Co., Lewiston, Me.

**Looms.**—One Northrop-Draper print cloth loom; one Northrop-Draper sateen loom, made by Draper Company, Hopedale, Mass. One high-speed loom, made by Kilburn & Lincoln, Fall River, Mass. One sheeting loom; one twill loom, made by Whitin Machine Works, Whitinsville, Mass. One print cloth loom; one 2x1 box loom; one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One Crompton 4x1 box gingham loom; one Crompton 4x1 box loom, with 20-harness dobby; one Crompton single box loom, with 400 hook Jacquard machine; one Knowles Gem loom, 4x4 box; one Stafford single box loom, with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass.

### Dyeing Department.

The dyeing department is now permanently located in the basement of the new Textile Building. Here there is devoted to this work an experimental dyeing laboratory, a large dye-house 70x50, a lecture room, an office, and a stock-room.

The experimental dyeing laboratory is fitted up to accommodate thirty students and contains all the necessary conveniences, including dye-baths heated by indirect steam coils, enabling the student to carry out six dye trials at once and giving uniform conditions when desired.

The dye-house is being equipped with dyeing, bleaching, and mercerizing machinery for handling the materials in all of its different forms. Already through the kindness of the different manufacturers some donations have been made to this department, and it is expected that the dye-house will be shortly equipped with the most approved machines.

Through the kindness of the dyestuff dealers a complete line of dyestuffs has been furnished the College, and all the latest dyes are regularly sent.

### Power Transmission.

Pulleys, shafting, hangers and couplings, made by Jones and Laughlins, Pittsburg, Pa.

Belting made by Fayerweather and Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

### Heating Plant.

Steam Coils and Blowing Fan made by B. F. Sturtevant Co., Boston, Mass.

**VII. The Four Year Course in Textile Industry**, leading to the degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 206† -----	2	--	--
Mechanical Drawing, 207 -----	--	2	2
Wood-work, 209 -----	1	1	1
Forge-work, 210 -----	1	1	1
Mechanical Technology, 214 -----	1	1	1
Algebra, 220 -----	4	4	--
Geometry, 221 -----	--	--	4
Book-keeping, 223 -----	1	1	1
Elementary Physics, 217 -----	2	2	2
English, 224 -----	3	3	3
History, 229 -----	2	2	2
Military Drill, 232 -----	3	3	3

### Sophomore Year.

Carding and Spinning, 194 -----	1	1	1
Mechanical Drawing, 208 -----	2	2	2
Forge-work, 211 -----	1	--	--
Pattern-making, 212 -----	--	1	1
Electricity and Magnetism, 218 -----	2	2	2
Geometry, 221 -----	4	--	--
Trigonometry, 222 -----	--	4	4
Inorganic Chemistry, 201 -----	3	3	3
Inorganic Chemistry (laboratory), 202 -----	2	2	2
English, 225 and 227 -----	2	2	2
Military Drill, 232 -----	3	3	3

\*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 194-----	3	3	3
Weaving, 195-----	3	3	3
Textile Designing, 196-----	3	3	3
Textile Chemistry and Dyeing, 197-----	2	2	2
Textile Chemistry and Dyeing (lab'y), 198	2	2	2
Dynamo Machinery, 219-----	2	2	2
English and History, 230 and 228-----	2	2	2
Military Tactics, 233-----	1	1	1
Military Drill, 232-----	3	3	3

Senior Year.

Carding and Spinning, 194-----	4	4	4
Weaving, 195-----	4	4	4
Textile Designing, 196-----	3	3	3
Steam-engine, 216-----	2	2	2
English, 228 and 226-----	2	2	2
Political Economy, 231-----	2	2	2
Military Drill, 232-----	3	3	3

VIIa. The Two Year Course in Textile Industry.

First Year.

Carding and Spinning, 194-----	3	3	3
Weaving, 195-----	3	3	3
Textile Designing, 196-----	3	3	3
Free-hand Drawing, 206-----	2	--	--
Mechanical Drawing, 207-----	--	2	2
Wood-work, 209-----	1	1	1
Forge-work, 210-----	1	1	1
Mechanical Technology, 214-----	1	1	1
English, 224-----	3	3	3
Military Drill, 232-----	3	3	3

## Second Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 194-----	4	4	4
Weaving, 195-----	4	4	4
Textile Designing, 196-----	3	3	3
Mechanical Drawing, 208-----	2	2	2
Forge-work, 211-----	1	--	--
Pattern-making, 212-----	--	1	1
Mechanical Processes, 215-----	1	1	1
English, 225 and 227-----	2	2	2
Military Drill, 232-----	3	3	3

## Description of Subjects.

**194. Carding and Spinning.**—Lectures and recitations; practice in operating card and spinning-room machinery. Cotton; classifying the plant; its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; cards; railway-heads; drawing-frames; slubbers; intermediates; speeders; jacks. Ring spinning-frames and mules. Spoolers and warpers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Required of Sophomores, Juniors and Seniors in the full course and of first and second-year students in the short course. Professor WILSON.

**195. Weaving.**—Lectures and practice in warp preparation, operating and fixing looms, cloth finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot air slasher; construction of slasher; creel; cylinders; immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing ingredients; values of ingredients; size receipts for light, medium, and heavy sizing. Loom-mounting: reeds and



harnesses; drawing in; and putting warps in looms. Looms: construction of plain loom; principal movements in weaving; off and let take up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms: construction and advantages. Drop box looms; chain building for box looms; changing boxes to have easy running loom; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building; arranging colors in boxes; raising and lowering boxes to give easy running loom. Ball and shoe pick motion. Construction and fixing of head motion. Dobby; single and double action; construction and fixing of dobbie; dobbies with extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half-motion; and jumper attachment for leno. Springs and spring-boxes. Negative and positive head motions. Pattern chain building. Jacquard, single and double lift; construction and tie up. Weave-room calculations: speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering; tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Required of Juniors and Seniors in the Four Year Course and of first and second-year students in the Short Course. Mr. NELSON.

**196. Textile Designing.**—Lectures and practice in designing, fabric structure and cloth analysis. Designing: method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honey-comb weaves. Bedford cords and combinations with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piques. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doupes. Principles of working both top and bottom doupes. Combination of plain and



fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Fabric structure: textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Cloth analysis. Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen; worsted; silk; linen, and cotton yarns. Determination of one system of yarn to that of another. Required of Juniors and Seniors in the Four Year Course, and of first and second-year students in the Short Course. Mr. NELSON.

### DYEING.\*

**197. Dyeing.**—Lectures. A study of the chemistry of the textile fibers, and the principles involved in bleaching, dyeing, and printing. The student becomes acquainted with methods and machinery for dyeing cotton, wool, silk, and mixed goods; and learns the most important dyes now in use. Reference book, Fraps' *Principles of Dyeing*. Two periods. Required of Juniors. Mr. FRENCH.

**198. Dyeing Laboratory.**—The experiments are designed to accompany Course 197. Working with small skeins of yarns, the student learns different methods of dyeing, applies a number of dyes, tests their fastness to washing, and other agencies, and applies other tests. All dyed skeins and fastness tests are entered in suitable scrap-books. Two periods. Required of Juniors. Mr. FRENCH.

### CHEMISTRY.\*

**201. Inorganic Chemistry.**—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds

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\*For further information see Courses in Industrial Chemistry.

are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor FRAPS.

**202. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs, under the eye of the instructor, experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. SYME and Mr. FRENCH.

### MECHANICAL ENGINEERING.\*

**206. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. WEBER.

**207. Elementary Mechanical Drawing.**—Use of instruments; geometric drawing; isometric drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Freshmen and first-year students. Mr. WEBER.

**208. Mechanical Drawing.**—Working sketches and drawing machine parts from the models; tracing and blue-printing; elementary machine design. Two periods. Required of Sophomores. Mr. CHITTENDEN.

**209. Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. One period. Required of Freshmen. Mr. BRAGG.

**210. Forge-work.**—Exercises in working with iron, welding; uses and care of forge-tools and fires. One period. Required of Freshmen. Mr. DEAL.

**211. Forge-work.**—Exercises in working with steel; tempering; case-hardening. One period, first term. Required of Sophomores and second-year students. Mr. DEAL.

**212. Pattern-making.**—Exercises in making patterns, generally of machine parts. One period, second and third terms. Required of Sophomores and second-year students. Mr. BRAGG.

**214. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; principles of correct methods

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\*For full information see Course in Mechanical Engineering.

of wood-working and forging; care of belting and shafting. One period. Required of Freshmen. Mr. BRAGG.

**215. Mechanical Processes.**—Description of machines used in engineering-work; methods of pattern-making; moulding, casting and heavy forging; description of various machine tools and methods of performing work on them; boiler-making and plate-work. One period. Required of second-year students. Mr. CHITTENDEN.

**216. Steam-engine.**—Descriptive study of the simple steam-engine; names and uses of the various parts of an engine; various types of engines and fittings, foundations, and pipings; different types of boilers and setting; arrangement of power plants; care of engines and boilers. Two periods. Required of Seniors. Professor DICK.

### PHYSICS.\*

**217. Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**218. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Sophomores. Professor WEIHE.

### ELECTRICAL ENGINEERING.

**219. Dynamo Machinery.**—Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two periods. Required of Juniors. Professor WEIHE and Mr. WALTER.

### MATHEMATICS.†

**220. Advanced Algebra.**—Begins at quadratic equations; general theory of equations; solution of higher equations, etc. Wells's *Higher Algebra*. Four periods, first and second terms. Required of Freshmen. Mr. YATES and Mr. FISH.

**221. Geometry.**—Plane and solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of Freshmen. Four periods, first term. Required of Sophomores. Mr. HOLMES.

**222. Trigonometry.**—Four hours, second and third terms. Required of Sophomores. Mr. YATES.

**223. Book-keeping.**—The work of the text-books supplemented by numerous original examples and sets for practice. One period. Required of Freshmen. Mr. YATES.

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\*For full information see Course in Electrical Engineering.

†For full information see Course in Civil Engineering.

## ENGLISH.

**224. Introductory Composition and Rhetoric.**—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL and Mr. OWEN.

**225. Rhetoric, Criticisms, Essays.**—The student is taught the essentials of good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Two periods, second term. Professor HILL.

**226. Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

**227. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Professor HILL.

**228. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

## HISTORY.

**229. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**230. English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of all Juniors. Professor HILL.

**POLITICAL ECONOMY.**

**231. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Two periods. Required of Seniors. President WINSTON.

**MILITARY SCIENCE.**

**232. Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**233. Tactics.**—Theoretical instruction in the Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies, etc. One period. Required of Juniors. Captain PHELPS.

## NORMAL COURSES.

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### I. For Rural Teachers:

- (a) Two Year Course.
- (b) One Year Course.
- (c) Summer Course.

### II. For City Teachers:

- (a) Two Year Course.
- (b) One Year Course.
- (c) Summer Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education is being introduced into our public schools, and the College has a constant demand for well trained industrial teachers. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short courses or the Summer Courses, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines but also in the other public school branches and in one or more sciences, or in higher Mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The expenses in the Normal Courses are the same as in the other courses of the colleges, except in the Summer Courses.



The Normal Courses are as follows:

## I. Courses For Rural Teachers.

### (a) TWO YEAR COURSE.

#### First Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture -----	3	3	3
Nature Study { Plants -----	3	3	3
{ Animals -----	3	3	3
English -----	3	3	3
Mathematics -----	5	5	5
Agricultural Chemistry -----	2	2	2
Military Drill -----	3	3	3

#### Second Year.

Farm Equipment -----	4	--	--
Soils -----	--	4	--
Crops -----	--	--	4
Plant Diseases -----	3	--	--
Physics -----	--	3	--
Botany -----	--	--	3
Mathematics -----	4	4	4
English -----	3	3	3
Drawing -----	2	2	2
History -----	2	2	2
Military Drill -----	3	3	3

### (b) ONE YEAR COURSE.

Agriculture -----	3	3	3
Farm Equipment, Soils and Crops -----	4	4	4
Nature Study -----	3	3	3
Mathematics -----	4	4	4
English -----	3	3	3
Agricultural Chemistry -----	2	2	2
Military Drill -----	3	3	3

### (c) SUMMER COURSE.

SEE ANNOUNCEMENT OF SUMMER SCHOOL BELOW.



## II. Courses For City Teachers.

### (b) TWO YEAR COURSE.

#### First Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing-----	2	2	2
Wood-work-----	1	1	1
Forge-work-----	1	1	1
Mechanical Technology-----	1	1	1
Algebra and Geometry-----	4	4	4
English-----	3	3	3
History-----	2	2	2
Drill-----	3	3	3
Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Book-keeping 1.			

#### Second Year.

Drawing-----	2	2	2
Wood-work-----	4	4	4
Forge-work-----	1	1	1
English-----	2	2	2
Agriculture and Descriptive Geometry-----	2	2	2
Architectural Drawing-----	2	2	2
Geometry and Trigonometry-----	4	4	4
Drill-----	3	3	3
Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology, Physiological Botany 3.			

### (b) ONE YEAR COURSE.

Drawing-----	3	4	4
Wood-work-----	4	5	5
Forge-work-----	2	2	2
Architecture-----	2	--	--
Architectural Drawing-----	2	2	2
Algebra and Geometry-----	4	4	4
Drill-----	3	3	3
Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Book-keeping 1, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.			

### (c) SUMMER COURSE.

SEE ANNOUNCEMENT OF SUMMER SCHOOL BELOW.

## SUMMER SCHOOL FOR TEACHERS.

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GEO. T. WINSTON, A. M., LL.D., President.

CHAS. W. BURKETT, M. S., Ph. D., Dean of Industrial Department.

EDWARD P. MOSES, A. M., Dean of Normal and Literary Departments.

CHARLES J. PARKER, Secretary.

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### COURSES OF INSTRUCTION FOR BOTH MEN AND WOMEN.

**Agriculture**, including Gardening, Floriculture, Fruit Growing, Budding and Grafting, Dairying, Poultry-raising, Stock-judging, breeding and feeding, Soil Culture, etc.

The above is in accordance with State law requiring elementary agriculture in public schools. Such instruction will be given as can be repeated in the public schools.

**Road-building**, including location, grading, construction of road-bed, drainage, materials for road-covering, road-making machinery, leveling, use of level instruments, draughting. Instruction is both practical and theoretical.

**Manual Training**, including work in Wood, Iron, Plaiting, Weaving, Drawing, Designing and Ornamentation.

**Nature Study**, including Soils, Plant Growth, Plant Nutrition, Plant Diseases, Insects and Birds in Relation to Agriculture.

**Normal Department**, including Public School Branches and Kindergarten. Practice School of 100 or more children. Instruction in every grade of work for children from six to fourteen years of age. Lectures and Illustrations on the Grading of Schools, Classification, Methods, etc.

**Literary Department**, including instruction in the following subjects: English, English Literature, American Literature, Latin, Greek, French, German, North Carolina History, American History, General History, Algebra, Geometry, Music, including Vocal Music

for Public Schools, Sight Singing, Chorus Work and Instrumental Music.

**Normal Classes for Sunday School Workers.**

**Round Table Talks** each afternoon.

**Lectures and Concerts** each evening.

**Expenses.**—Board and room in College Dormitories—separate buildings for men and women—\$10.00 per month. Those wishing board outside can secure it at \$12.00 per month up. Tuition, \$5. Registration, \$1. Drawing instruments, \$1.50.

**Session** begins July 1 and closes July 31.

## DONATIONS.

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The College makes thankful acknowledgment of the receipt of the following gifts during the year:

### To the Department of Civil Engineering.

*Keuffel & Esser Company, New York, N. Y.*—One engineer's Y level.

### To the Department of Chemistry.

*Chilean Nitrate Works, W. S. Myers, Director, New York, N. Y.*—Set of lantern slides showing nitrate deposits and works.

### To the Mechanical Engineering Department.

*Westinghouse Air-Brake Company.*—Complete air-brake equipment.

*New York Air-Brake Company.*—Complete air-brake equipment.

*Babcock & Wilcox Company, New York, N. Y.*—Half the cost of two 75 horse-power boilers.

### To the Textile Department.

*Draper Company, Hopedale, Mass.*—One 50-spindle reel; loom temples; one Schaer cloth scale; template and calculating rule; oil cans; bale shears; lifting rod cleaners; band scale; twister stop motions.

*James H. Bellington Company, Philadelphia, Pa.*—Reduced prices on bobbins, spools and skewers, and supply of shuttles for looms.

*American Vulcanized Fiber Company, Wilmington, Del.*—Reduced price on roving cans.

*Jas. Hill Manufacturing Company, Providence, R. I.*—Reduced price on roving cans.

*B. F. Sturtevant Company, Boston, Mass.*—Blower heating system, consisting of fan and steam coils.

*Covel & Osborne Company, Fall River, Mass.*—Banding for spinning frames, spoolers and twisters.

*National Ring Traveler Company, Providence, R. I.*—Ring travelers for spinning and twisting.

*Jones & Laughlins, Pittsburg, Pa.*—Additional pulleys.

*American Pulley Company, Philadelphia, Pa.*—One wrought steel pulley.

*Cling Surface Manufacturing Company, Buffalo, N. Y.*—One can "Cling Surface" belt dressing.

*Barber & Colman, Boston, Mass.*—One "Barber" knotter.

*Southern Shuttle and Bobbin Company, Westminster, S. C.*—Supply of spools and shuttles.

*Emmons Loom Harness Company, Laurence, Mass.*—Cotton loom harness and lease reed.

*Dixie Oil Works, Baltimore, Md.*—Can loom oil.

*S. A. Felton, Son & Company, Manchester, N. H.*—Mill brushes.

*American Supply Company, Providence, R. I.*—Loom reeds and beaming combs.

*Robert Carruthers, Lowell, Mass.*—Loom reeds and slasher combs.

*American Enamel Company, Providence, R. I.*—Lease rods and yarn drying rods.

*L. S. Watson Manufacturing Company, Leicester, Mass.*—Harness shafts, heddles and hand cards.

*Loom Picker Company, Biddeford, Me.*—Pickers, lug straps and harness straps.

*Faulkner, Page & Company, New York.*—Box sample cloths.

*Fairmont Machine Company, Philadelphia, Pa.*—Warp dyeing machine.

*Elizabeth Cotton Mill, Charlotte, N. C.*—Ten pounds of Nos. 50 and 60, 2-ply, Egyptian cotton yarn.

*Proximity Manufacturing Company, Greensboro, N. C.*—Two beams of yarn.

*Dilling Cotton Mill, King's Mountain, N. C.*—One beam No. 28 yarn.

*Neuse River Mills, Raleigh, N. C.*—One beam No. 18 yarn.

*Gaffney Manufacturing Company, Gaffney, S. C.*—One print cloth warp.

*Chatham Manufacturing Company, Elkin, N. C.*—Ten pounds woolen yarn.

*Ada Manufacturing Company, Charlotte, N. C.*—Fifteen pounds cotton yarn.

*Farbenfabriken of Elberfeld Company, New York, N. Y.*—Samples of dye stuffs.

*H. A. Metz & Company, New York, N. Y.*—Samples of dye stuffs.

*Cassella Color Company, New York, N. Y.*—Samples of dye stuffs.

*Berlin Aniline Company, New York, N. Y.*—Samples of dye stuffs.

*A. Klipstein & Company, New York, N. Y.*—Samples of dye stuffs.

*C. Bischoff & Company, New York, N. Y.*—Samples of dye stuffs.

*Kuttruff, Pickhardt & Company, New York, N. Y.*—Samples of dye stuffs.

*New York and Boston Dyewood Company, New York, N. Y.*—Samples of dye stuffs.

*F. E. Atteaux & Company, Boston, Mass.*—Samples of dye stuffs.

*Schoellkopf, Hartford & Hanna Company, Buffalo, N. Y.*—Samples of dye stuffs.

*Read, Holliday & Sons, Ltd., New York, N. Y.*—Samples of dye stuffs.

### Courtesies Extended.

Textile Excelsior, Charlotte, N. C.

Textile Manufacturers' Journal, New York City.

Fiber and Fabric, Boston, Mass.

Manufacturers' Record, Baltimore, Md.

Dyers' Bulletin, Philadelphia, Pa.

The Chemical Trade Review and Dyers' Trade Journal, Philadelphia, Pa.

Garment Dyers' Guide, Philadelphia, Pa.

Pilot Cotton Mills, Raleigh, N. C.

Caraleigh Cotton Mills, Raleigh, N. C.

### To the Library.

*J. H. Cutler, Raleigh, N. C.*—"Christmas in the Adirondacks," by W. H. H. Murray.

*Prof. W. A. Withers, Raleigh, N. C.*—"Historic Doubts as to the Execution of Marshal Ney," by J. A. Weston.

*D. W. Robertson, Washington, D. C.*—"The Caxtons," by Lord Lytton.

*L. T. Winston, Raleigh, N. C.*—"Wrecked on a Reef."

*J. S. Pierson, New York.*—"James Chalmers: His Autobiography and Letters by Richard Lovett.

*Mrs. George T. Winston, Raleigh, N. C.*—"Diary of a Goose Girl," by Kate Douglas Wiggin, and "Elizabeth and her German Garden."

*Mr. S. W. Cramer, Charlotte, N. C.*—Collection of Technical Magazines.

# CATALOGUE OF STUDENTS.

## GRADUATES.

<i>Name.</i>	<i>Post-office.</i>	<i>Major Course.</i>
JUNIUS SIDNEY CATES,	Swepsonville,	Agriculture.
JOHN CHESTER KENDALL,	Peterboro, N. H.,	Bacteriology.
CARROLL LAMB MANN,	Englehard,	Civil Eng.
RUSSELL ELSTNER SNOWDEN,	Snowden,	Civil Eng.
WILLIAM ANDERSON SYME,	Raleigh,	Chemistry.
CLEVELAND DOUGLASS WELCH,	Waynesville,	Agr. and El.
LOUIS THOMAS YARBROUGH,	West Raleigh,	Civil Eng.

## SENIOR CLASS.

SIDNEY WOODWARD ASBURY,	Burkmont,	M. E.
WILLIAM MORTON BOGART,	Washington,	M. E.
LESLIE NORWOOD BONEY,	Wallace,	Tex.
JOHN SAMUEL PINKNEY CARPENTER,	Lincolnton,	Tex.
WALTER CLARK, JR.,	Raleigh,	M. E.
JOHN ELIOT COIT,	Salisbury,	Agr.
SUMMEY CROUSE CORNWELL,	Dallas,	C. E.
CHARLES LESTER CREECH,	Greensboro,	Chem.
EUGENE ENGLISH CULBRETH,	Statesville,	E. E.
WALTER LEE DARDEN,	Goldsboro,	Tex.
JUNIUS FRANKLIN DIGGS,	Diggs,	Chem.
THEOPHILUS THOMAS ELLIS,	Henderson,	E. E.
EDWARD EVERITT ETHERIDGE, JR.,	Elizabeth City,	E. E.
JOHN DANIEL FERGUSON,	Bladenboro,	E. E.
HUGH PIERCE FOSTER,	Nance,	M. E.
OLIVER MAX GARDNER,	Shelby,	Chem.
LAMAR CARSON GIDNEY,	Shelby,	E. E.
JOHN HOWARD GLENN,	Crowder's Creek,	M. E.
EMIL GUNTER,	Pierson, Fla.,	E. E.
EUGENE COLISTUS JOHNSON,	Ingold,	M. E.
JAMES MATTHEW KENNEDY,	McClammy,	Tex.
WILLIAM FRANK KIRKPATRICK,	Charlotte,	E. E.
BENNETT LAND, JR.,	Elizabeth City,	C. E.



<i>Name.</i>	<i>Post-office.</i>	<i>Major Course.</i>
JOHN THOMAS LAND,	Poplar Branch,	C. E.
EDMOND SHAW LYTCH,	Laurinburg,	E. E.
JESSE JOHN MORRIS,	Norfolk, Va.	C. E.
DAVID STARR OWEN,	Fayetteville,	E. E.
JOHN HARVEY PARKER,	Hillsboro,	E. E.
JOEL POWERS,	Method,	M. E.
EDWARD HAYS RICKS,	Enfield,	M. E.
GASTON WILDER ROGERS,	Raleigh,	E. E.
CHARLES BURDETTE ROSS,	Charlotte,	Tex.
JOHN HOUSTON SHUFORD,	Charlotte,	Chem. (D).
HOWARD SIMPSON,	Simpson Store,	M. E.
EDWARD ROE STAMPS,	Raleigh,	Tex.
GEORGE YATES STRADLEY,	Asheville,	C. E.
CHARLES EDWARD TROTTER,	Franklin,	Chem.
JONATHAN WINBORNE WHITE,	Greenville,	Chem. (D).
EDWIN SEYMOUR WHITING,	Hamlet,	Tex.

## JUNIOR CLASS.

NELSON ADAMS,	McColl, S. C.,	M. E.
HAYWOOD LEWIS ALDERMAN,	Greensboro,	E. E.
EUGENE CLEVELAND BAGWELL,	Raleigh,	C. E.
EDWARD PAR BAILEY, JR.,	Wilmington,	M. E.
JAMES CLAUDIUS BARBER,	Barber,	M. E.
WILLIAM WALTON BARBER,	Barber,	M. E.
WILLIAM ALEXANDER BARRETT,	White Store,	E. E.
HARLAN GRAVES CARR,	Xenia,	C. E.
ARTHUR DEVLIN,	Washington, D. C.,	Tex.
TIMOTHY ELDRIDGE,	Glenwood,	E. E.
JAMES WILLIAM FARRIOR,	Kenansville,	E. E.
WILLIAM WALTER FINLEY,	North Wilkesboro,	Agr.
DAN RUSSELL FOSTER,	Wilmington,	Tex.
GEORGE WASHINGTON FOUSHEE,	Greensboro,	Tex.
HERBERT MILES FOY,	Mt. Airy,	M. E.
EDGAR WILLIAM GAITHER,	Wilmington,	Chem. (D).
PAUL STIREWALT GRIERSON,	Mooreville,	E. E.
JOSEPH PERRIN GULLEY, JR.,	Raleigh,	E. E.
JARVIS BENJAMIN HARDING,	Greenville,	Tex.
JOHN YOUNG HEDRICK,	Salisbury,	M. E.
GEORGE HERBERT HODGES,	Kinston,	M. E.
BRANTON FAISON HUGGINS,	Goldsboro,	M. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Major Course.</i>
HILL McIVER HUNTER,	Greensboro,	Tex.
WILLIAM KERR,	Bryson City,	Agr.
ROBERT ROY KING,	Danbury,	M. E.
ERNEST ERWIN LINCOLN,	Kinston,	C. E.
EDWIN LYTCH,	Lytch,	Agr.
JOHN FAIRLY MCINTYRE,	Laurinburg,	M. E.
JAMES MCKIMMON,	Raleigh,	Tex.
JOSEPH ALFRED MILLER,	Brevard,	E. E.
WILLIAM FIELD MORSON,	Raleigh,	C. E.
LEON ANDREWS NEAL,	Marion,	C. E.
WILLIAM JOEL PATTON,	Brevard,	E. E.
FREDERICK COLWELL PHELPS,	Raleigh,	E. E.
WILLIAM WALTER RANKIN, JR.,	Charlotte,	M. E.
RISDEN PATTERSON REECE,	Mt. Airy,	M. E.
WILLIAM RICHARDSON, JR.,	Selma,	M. E.
CHARLES THOMAS ROGERS,	Newport,	Tex.
JAMES CLARENCE TEMPLE,	Sanford,	Agr.
JOSEPH KENDALL WAITT,	Raleigh,	C. E.
MARION EMERSON WEEKS,	Scotland Neck,	M. E.
ALBERT CLINTON WHARTON, JR.,	Clemmons ville,	Agr.

### SOPHOMORE CLASS.

JOHN GRANGE ASHE,	Raleigh,	E. E.
ROBERT JAMES AVERY,	Morganton,	Agr.
OSCAR LUTHER BAGLEY,	Bagley,	Chem.
IRA THOMASON BAILEY,	Woodleaf,	Agr.
EDGAR LEROY BEST,	Fremont,	E. E.
JAMES GAITHER BONNIWELL,	Raleigh,	E. E.
BENJAMIN ALEXANDER BROOM,	Olive Branch,	E. E.
ARCHIE BROWN,	Fayetteville,	C. E.
JOEL WATKINS BULLOCK,	Williamsboro,	Agr.
HENRY BROZIER CARTWRIGHT,	Elizabeth City,	C. E.
WILLIAM MILLER CHAMBERS,	Wentworth,	E. E.
ARTHUR MILLS DIXON,	Gastonia,	Tex.
LATTA VANDERION EDWARDS,	Merry Oaks,	C. E.
WALTER GOSS FINCH,	Lexington,	M. E.
STERLING GRAYDON,	Abbeville, S. C.,	M. E.
FRED WATSON HADLEY,	Siler City,	E. E.
WILLIAM WALLACE HANKS,	Durham,	E. E.
RICHARD HUGH HARPER,	Patterson,	M. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Major Course.</i>
ODIS HILDRETH HENDERSON,	Hampstead,	M. E.
LABAN MILES HOFFMAN, JR.,	Dallas,	Tex.
RICHARD ROWAN HOLT,	Smithfield,	Agr.
JULIAN MEREDITH HOWARD,	Tarboro,	C. E.
FRED LAFAYETTE HUFFMAN,	Morganton,	C. E.
ARTHUR TEMPLETON KENYON,	Clinton,	C. E.
WILLIAM THOMAS KNIGHT, JR.,	Tarboro,	E. E.
STARR NEELY KNOX,	Pineville,	C. E.
JAMES HERRITAGE KOONCE,	Richlands,	C. E.
ROBERT CHARLES LEHMAN,	Raleigh,	C. E.
HENRY MARVIN LILLY,	Rest,	C. E.
SEBOR SMEDES LOCKHART,	Wadesboro,	E. E.
LIPSCOMB GOODWIN LYKES,	Tampa, Fla.,	Chem. (M).
GEORGE G. LYNCH,	Wilmington,	E. E.
WALTER HOGE MCINTYRE,	Wilmington,	E. E.
CHARLES WIGG MARTIN,	Portsmouth, Va.,	Agr.
JAMES FRANK MARTIN,	Danbury,	E. E.
JAMES OSCAR MORGAN,	Etowah,	Agr.
LINDSLEY ALEXANDER MURR,	Wadesboro,	E. E.
GARLAND PERRY MYATT,	Raleigh,	Chem.
JOHN ALSEY PARK,	Raleigh,	M. E.
LIUNS MARCELLUS PARKER,	Raleigh,	E. E.
JAMES HICKS PEIRCE,	Warsaw,	E. E.
EDWARD GRIFFITH PORTER, JR.,	Goldsboro,	C. E.
JOHN FORNEY REINHARDT, JR.,	Reinhardt,	Agr.
ROBERT WALTER SCOTT, JR.,	Melville,	Agr.
JAMES ROSCOE SECHREST,	High Point,	C. E.
CHARLES ALVIN SEIFERT,	Wilmington,	Chem.
WARD SHANNONHOUSE,	Charlotte,	E. E.
WILLIAM LINCOLN SMITH, JR.,	Wilmington,	Chem.
JOHN DAVIDSON SPINKS,	Albemarle,	C. E.
JOHN HOUSTON SQUIRES,	Lenoir,	Agr.
DALLAS MIFFIN STANTON,	La Grange,	Agr.
CHARLES TENENT VENABLE,	Asheville,	E. E.
SYLVESTER MURRAY VIELE,	Salisbury,	E. E.
WALTER JENNINGS WALKER,	Winston-Salem,	E. E.
STEPHEN DOCKERY WALL,	Rockingham,	M. E.
RALPH OURAY WALTON,	Morganton,	M. E.
WALTER WELLINGTON WATT, JR.,	Charlotte,	Tex.
SAMUEL TURNER WHITE,	Warrenton,	C. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
THOMAS WILSON WHITE,	Asheville,	E. E.
ARCHIE CARRAWAY WILKINSON,	Charlotte,	C. E.
JOHN ENOCH WILLIAMS,	Kinston,	E. E.

**FRESHMAN CLASS.**

DURANT STEWART ABERNETHY,	Hickory,	Agr.
GEORGE GILDEROY ALLEN,	Hiddenite,	Tex.
RISDEN TYLER ALLEN,	Wadesboro,	E. E.
RAYMOND VANCE ALLISON,	Statesville,	E. E.
GEORGE PAGE ASBURY,	Burkmont,	Chem.
JOHN GILBERT BALDWIN,	Maxton,	E. E.
ARLEY ELBERT BARBER,	Elon College,	Agr.
JAMES CLAUDIUS BEAVERS,	Morrisville,	Agr.
HARWOOD BEEBE,	Baltimore, Md.,	C. E.
NEEDHAM ERIC BELL,	Kinston,	Chem.
KENNETH LEON BLACK,	Mt. Mourne,	C. E.
RICHMOND PEARSON BLACKMER,	Salisbury,	C. E.
STERLING GEE BODDIE,	Laurel,	Tex.
JAMES ROBINSON BOSTIAN,	Albemarle,	M. E.
WILLIAM FRANCIS BROCK,	Farmington,	E. E.
PHILIP DODDRIDGE BUIE,	Red Springs,	Tex.
CALVIN HALCOMB BURKHEAD,	Concord,	E. E.
WILLIAM ANDERS BUYS,	Havelock,	C. E.
MARK HOPKINS CHESBRO,	Claremont, Va.,	Agr.
CONNER CALHOUN CLARDY,	Concord,	E. E.
DAVID MACKENZIE CLARK,	Weldon,	C. E.
JOHN WASHINGTON CLARK,	Raleigh,	M. E.
JAMES DUNCAN CLARKE, JR.,	Tampa, Fla.,	Chem.
SAMUEL HERBERT CLARKE,	Statesville,	C. E.
WILEY THEODORE CLAY,	Hickory,	M. E.
EDWARD CLIFTON CLINARD,	Hickory,	M. E.
GUY ELLIS CLINE,	Lincolnton,	M. E.
ARTHUR GARDNER COFFIN,	Greensboro,	E. E.
DUNCAN ARCHIBALD COX,	Rowland,	E. E.
ALEXANDER DOANE CROMARTIE,	Garland,	Agr.
WILLIAM OSBORNE CRUMP,	Polkton,	E. E.
RALEIGH EDGAR CRUMPLER,	Washington,	E. E.
WILLIAM MAURICE DAUGHTRIDGE,	Rocky Mount,	Agr.
ALFRED FORBES DUCKETT,	Raleigh,	M. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
WILLIAM CARLYLE ETHERIDGE,	Manteo,	M. E.
JAMES BECKETT EWART,	Hendersonville,	E. E.
SAMUEL MORGAN FISHER,	Lake Landing,	C. E.
SHIRLY WATSON FOSTER,	Nance,	Agr.
ELIAS VANBUREN FOWLER,	Glenville,	E. E.
CHARLES WYLIE FRANKLIN,	Mt. Airy,	Agr.
JAMES LYTCH GIBSON,	McColl, S. C.,	Agr.
WILLIAM ALVA GREENLEAF,	Elizabeth City,	M. E.
ARTHUR WYNNE GREGORY,	Halifax,	Tex.
CHARLES WALTER HACKETT,	North Wilkesboro,	C. E.
CHARLES MARION HAMILTON,	Charlotte,	E. E.
GEORGE PARISH HAMILTON,	Charlotte,	M. E.
HORACE LESTER HAMILTON,	Biltmore,	E. E.
JOHN FREDERICK HANSELMAN,	Manson,	M. E.
GEORGE ROM HARDESTY,	Wakefield,	E. E.
CLARENCE CARL HARRELL,	Hamilton,	Agr.
WADE DALTON HERITAGE,	Burlington,	M. E.
CLARENCE WILSON HEWLETT,	Wilson,	E. E.
JAMES ALLAN HIGGS, JR.,	Raleigh,	C. E.
CYRUS WALKER HODGES,	Lagrange,	M. E.
GEORGE HOWE HOLMAN,	Raleigh,	Tex.
CLAUDE WILLIAM HUBAND,	Winston,	M. E.
LESLIE LAFAYETTE JORDAN,	Raleigh,	C. E.
CHARLES HIRAM KING,	Durham,	M. E.
WILLIAM GRAHAM KNOX,	Charlotte,	E. E.
LEROY CARLATAN LASSITER,	Snow Hill,	Tex.
EUGENE LEE,	Dunn,	E. E.
MARTIN PEARL LIPE,	Mint Hill,	Agr.
ADAM LOCKHART,	Wadesboro,	C. E.
LOUIS EDGAR LOUGEE,	Raleigh,	M. E.
THOMAS MAYO LYKES,	Tampa, Fla.,	C. E.
CLAUDE BERNARD MCBRAYER,	Shelby,	C. E.
JOHN CHESTER MCCASKILL,	Maxton,	E. E.
MALCOLM ROLAND MCGIRT,	Rowland,	Agr.
HENRY BURNEY MCIVER,	Winston-Salem,	M. E.
HORACE SMITH MCLENDON,	Ansonville,	Agr.
ALBERT POWERS MCMILLAN,	Fayetteville,	Tex.
RAYMOND MAXWELL,	Resaca,	C. E.
JAMES EDWIN MOORE,	Williamston,	C. E.
LACY MOORE,	Graham,	E. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
WALTER BOOKER MOORMAN,	Asheville,	E. E.
JOSEPH GRAHAM MORRISON,	Mariposa,	Agr.
VICTOR MOTZ,	Lincolnton,	M. E.
JESSE CLARENCE MYRICK,	Littleton,	E. E.
BEN ALLEN NEWLAND, JR.,	Lenoir,	E. E.
CHARLES GATTIS NICHOLS, JR.,	Roxboro,	M. E.
CHARLIE FRANKLIN NEVIN,	Morven,	Agr.
LOLA ALEXANDER NIVEN,	Cairo,	Agr.
LEWIS MILTON ODEN,	Hunter's Bridge,	Agr.
THOMAS JEFFERSON OGBURN,	Greensboro,	M. E.
CLYDE ESTER PARKER,	Raleigh,	Chem.
ARTHUR LEE PASCHALL,	Vaughan,	Agr.
CARL RANDALL PEPPER,	Southport,	E. E.
WILLIAM ANDERSON PESCHAU,	Wilmington,	Agr.
ANGELO BETTLENA PIVER,	Wilson,	C. E.
WILLIAM CRAFTORD PIVER,	Wilson,	E. E.
PLEASANT HENDERSON POINDEXTER,	Donnoha,	Agr.
HENRY FRIES PRIMROSE,	Raleigh,	M. E.
THOMAS HENRY PRITCHARD,	Scotland Neck,	M. E.
DAVID RUDISILL QUICKEL,	Lincolnton,	M. E.
DURANT WAITE ROBERTSON,	Washington, D. C.,	Tex.
CLYDE VERNON ROSS,	Bonnerton,	C. E.
DAVID JOHN SANDERS,	Swanboro,	C. E.
ADRIAN LAFAYETTE SHUFORD,	Hickory,	Agr.
COLMAN MORELL SMITH,	Crystal Hill,	C. E.
EGBERT LEE SORRELL,	Penny,	Tex.
ERWIN BLAKENEY STACK,	Monroe,	E. E.
FREDDY JACKSON TALTON,	Pikeville,	Agr.
BAYARD TAYLOR,	Beaufort,	E. E.
TYRAS ALLANSON THORNTON,	Dunn,	C. E.
LUTHER RUSSELL TILLET,	Corolla,	E. E.
RICHARD HENRY TILLMAN,	Deep Creek,	E. E.
WILLIAM SIDNEY TOMLINSON,	Goldsboro,	C. E.
REID TULL,	Kinston,	C. E.
HUGH MARSHALL TURNER,	Norwood,	Tex.
JACKSON CORPENING TUTTLE,	Lenoir,	E. E.
ROBERT PEEL UZZELL,	Goldsboro,	Agr.
PETER VALAER, JR.,	Winston-Salem,	Tex.
LILLIAN LEE VAUGHAN,	Franklin,	M. E.
ROBERT CLAY WAITT,	Raleigh,	E. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
JOHN WADDELL WARREN,	Edenton,	C. E.
JULIUS LEWIS WEST,	Raleigh,	E. E.
EDGAR HARRIS WHITE,	Statesville,	E. E.
EARLY MCLOYD WHITEHEAD,	Bachelor,	Agr.
JAMES HARLEIGH WILLIAMS,	Rialto,	E. E.
LEWIS TAYLOR WINSTON,	Raleigh,	Agr.

### SHORT COURSE STUDENTS.

#### Second Year.

JOSEPH LAFAYETTE ABERNETHY,	Hickory,	Agr.
LEROY FRANKLIN ABERNETHY,	Hickory,	Agr.
JOHN DUNHAM BUNDY,	Monroe,	M. A.
PINCKNEY GUSTAVE DEAL,	Asheville,	M. A.
EDGAR VIVIAN EDENS,	Rowland,	M. A.
BEN FRANK GARDENER,	Hunts,	M. A.
THOMAS J. GEORGE,	Francisco,	Agr.
RICHARD PARK GIBBON,	Derita,	M. A.
CLYDE OSCAR LONG,	Cliffdale,	Agr.
CLARENCE LYTCH,	Laurinburg,	Agr.
ZEBULON CROW MAUNEY,	Shelby,	Tex.
WALTER GRAHAM MOORE,	Burgaw,	M. A.
WALTER EVERETT PAGE,	Morrisville,	M. A.
CHARLES LEE PAYNE,	Washington,	Tex.
JAMES PICKETT ROSE,	Statesville,	Tex.
FRANK ROBERT SMITH,	Scotland Neck,	Agr.
GEORGE ELLIOTT SMITH,	Kinston,	M. A.
ALONZO ALLEN TARLETON,	Long Pine,	Agr.
BENNIE JORDAN THIGPEN,	Tarboro,	Agr.
LaFAYETTE WILLIAMS,	Sparta,	Agr.
CARL FRANCIS YOUNG,	Salisbury,	Agr.

#### First Year.

THOMAS WILLIAM ADDICKS,	Raleigh,	M. A.
JOSEPH HERMAN BAKER,	Youngsville,	Agr.
HARRY EARL BANKS,	Elizabeth City,	M. A.
ERNEST HOWARD BARNES,	Bizzell,	M. A.
CLAUD RELIEU BAUCOM,	Apex,	M. A.
ZADOK KEMSTER BAYSDEN,	Richlands,	Tex.



<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
ZERA THAXTON BENSON,	Lake Comfort,	M. A.
JOHNNIE MILTON BLALOCK,	Oxford,	M. A.
ARCHIE LINDSAY BLOUNT,	Raleigh,	M. A.
JOHN YOUNG BONNER,	Aurora,	M. A.
VERNON THOMAS BOYD,	Jackson,	Agr.
MARION LEE BRANCH,	New Sterling,	Agr.
HARRY PATRICK BROWN,	Swan Quarter,	M. A.
NUMA REID BROUGHTON,	Garner,	Agr.
JESSE WORTH BURNS,	Gaddysville,	Agr.
JOSEPH NICHOLS BYNUM, JR.,	Farmville,	M. A.
DAVID MILLER CARTER,	Sanford,	M. A.
ROBERT HILL CARTER,	Blackstone,	M. A.
JAMES LUMSFORD CHERRY,	Raleigh,	Agr.
GEORGE CARLTON COLE,	Carbonton,	M. A.
MARTIN HENRY COLLINS,	Holly Springs,	M. A.
FRANK JONES COURTS,	Reidsville,	Agr.
CHARLES MAXY DAVIS,	Populi,	Agr.
LUBY DAVIS,	Goldsboro,	Agr.
GEORGE LEON DIXON,	Rocky Mount,	M. A.
CHARLES BERNARD DOVE,	Franklinville,	M. A.
JAMES STONEY DRAKE,	Mountain Island,	M. A.
CICERO HORACE DURHAM,	Saxapahaw,	Tex.
RUFUS EUGENE FORBIS,	Greensboro,	M. A.
JACOB TATUM EATON,	Farmington,	Agr.
MACON WAYNE FOSCUE,	Trenton,	M. A.
ELBERT MUNSEY FULTON,	Belews Creek,	M. A.
EUGENE GANT,	Reidsville,	M. A.
CLAUDE VIVIAN GARNER,	Griscom,	M. A.
WALTER MAURICE HAIGLER,	Hayesville,	Tex.
COOPER ANDREW HALL,	Woodsdale,	Tex.
GROVER CLEVELAND HARDESTY,	Morehead City,	Agr.
JOHN GABRIEL HARDISON,	Thurman,	Agr.
ABLE LYNCH HILL,	Rutherfordton,	Agr.
THOMAS CARL HINKLE,	Lexington,	M. A.
WILLIAM IRWIN HOLT,	Graham,	Agr.
WILLIAM NORMAN HOLT,	Smithfield,	M. A.
WALTER GUY HOPKINS,	Reidsville,	M. A.
JOHN WILLIAM HUMPHREY,	Clarks,	Agr.
RAY MARSHALL HUNTLEY,	Wadesboro,	M. A.
ST. CLAIR IRELAND,	Burlington,	M. A. .

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
DAVID CHERRY JAMES,	Greenville,	M. A.
CLARENCE WATT JOHNSON,	Gastonia,	M. A.
WILLIE ERNEST KEETER,	Union Mills,	M. A.
WALTER ERANDER KELLY,	Carthage,	Agr.
RICHARDS MARSHALL KENDRICK,	Augusta, Ga.,	M. A.
PHILIP DALTON KENNEDY,	Daltonia,	M. A.
JOHN FRANKLIN KERNODLE,	Liberty Store,	Agr.
JOB HANSELL KOON,	Asheville,	M. A.
ESTON LACKEY,	Morganton,	Agr.
FRED HARRIS LANE,	New Bern,	M. A.
PERCY CASPER LINDSAY,	Goldsboro,	Agr.
JOSEPH ALDEN LYON,	Elizabethtown,	Agr.
JOHN STEADMAN McDONALD,	Raleigh,	M. A.
WILLIAM EDWARD McLAUCHLIN,	Cheraw, S. C.,	M. A.
ANGUS LEE McLEAN,	Rowland,	Agr.
JOE ARCH McMILLAN,	Fairly,	Agr.
GEORGE LEWTER MARTIN,	Conway,	M. A.
WALTER JACOB MARTIN,	Wentworth,	M. A.
LEWIS CARLTON MATTHEWS,	Shelby,	Agr.
SAMUEL SANKEY MAUNEY,	Shelby,	Agr.
WILLARD BOWDEN MIDDLETON,	Warsaw,	M. A.
FRANK FAISON MILLER,	Pearsall,	M. A.
JAMES THOMAS MORGAN,	Corapeake,	Bldg. & Con.
NEWTON CHALMERS NEELY,	Waxhaw,	M. A.
ARTHUR AMICK NEESE,	Saxapahaw,	Tex.
HUBERT BERRY NICHOLSON,	Richlands,	Agr.
WALTER JEFFREYS NORWOOD,	Raleigh,	M. A.
BENJAMIN FRANKLIN NUNN,	Wilson,	M. A.
JAMES CHURCHWELL O'BERRY,	Dudley,	Agr.
NEWTON MARTIN ORMOND,	Ormondsville,	M. A.
WALTER LAFAYETTE PARKER,	Margarettsville,	M. A.
WILLIAM ROGER PERSON,	Pikeville,	Agr.
JACOB LESTER PINKUS,	Statesville,	M. A.
WINSLOW GERALD PITMAN,	Lumberton,	M. A.
AMBROSE JONES POLLARD,	Durham,	M. A.
JULIAN ALEXANDER POPE,	Lumberton,	M. A.
WILBURN BAKER PRESSON,	Unionville,	M. A.
EDWARD MARVIN PROCTOR,	Washington,	M. A.
GEORGE EDWARD RANCKE,	Lumberton,	M. A.
FLEETWOOD BROWN RANKIN,	Brown's Summit,	Tex.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
ESTON GEORGE RENNO,	Canton,	M. A.
FRANK REYNOLDS, JR.,	Ayr,	M. A.
PRINCE WILLIAM ROBERSON,	Stagsville,	Agr.
WALTER WOODS ROSEMAN,	Cleveland,	Agr.
SAMUEL JOSEPH SATTERWHITE,	Henderson,	M. A.
GEORGE FLETCHER SEDBERRY,	Fayetteville,	M. A.
WALLACE SELLERS,	Southport,	M. A.
WILLIAM HARRY SIGMON,	Hickory,	Agr.
JOHN RODERICK SMITH,	Blackstone,	M. A.
RALPH HUNTER SMITH,	New Bern,	M. A.
TENNYSON BARNETT SMITH,	Iron Station,	Agr.
WILLIAM WALTON SMITH,	Morganton,	M. A.
JESSE PAGE SPOON,	Oakdale,	Agr.
WILLIAM CRAWFORD STAPLES,	Reidsville,	M. A.
JIM EVERETTE STEVENS,	Goldsboro,	Agr.
IRA THOMAS STONE,	Kittrell,	M. A.
CHARLES CLEVELAND STRUPE,	Clemmonsville,	M. A.
WILLIAM SUMMERVILLE,	Charlotte,	Tex.
VANCE SYKES,	Rock Spring,	M. A.
LOFTON AGRIPPA TART,	Newton Grove,	M. A.
CLAUDE STRATTON TATE,	Littleton,	M. A.
ROBERT WILLIAM TATE,	Eclipse,	Agr.
EDGAR HAYWOOD TAYLOR,	Bachelor,	Agr.
HUGH FRANKLIN TURLINGTON,	Clinton,	Agr.
LUKE SWAIN WALL,	Wadesboro,	M. A.
ROBERT HAMER WARNER,	Fairley,	Agr.
WADDELL WATERS,	Wilmington,	M. A.
GEORGE MURRAY WATSON,	Wysocking,	M. A.
JOHN WESCOTT,	Manteo,	M. A.
ALEXANDER WHITE,	Floral College,	Agr.
DAVE LYNDON WHITE,	Trinity,	M. A.
ERNEST EUGENE WHITE,	Albright,	M. A.
SYDNEY RUSSELL WHITE,	Scotland Neck,	M. A.
JOSEPH D. WILLCOX,	Putnam,	M. A.
GROVER STOCKLAND WILLIAMS,	Boonville,	Agr.
JOE LEWIS WILLIAMS,	Inez,	M. A.
RUDOLF ONEIDA WILSON,	Delway,	Agr.
JOE EMMERSON WINSTEAD,	Wilmington,	M. A.
CHARLES FOSCUE WYATT,	Raleigh,	M. A.

## Irregular Students.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
NEWTON THATCH ANDERSON,	Milesville,	M. E.
OTIS KERR ASBURY,	Charlotte,	M. E.
WALTER RADFORD BAILEY,	Woodleaf,	Agr.
ABRAM OLIVER BRAY,	Elkin,	E. E.
ARCHIBALD ALEXANDER BROWN,	Efland,	C. E.
HILLIARD FRANCIS CHREITZBURG,	Gastonia,	E. E.
WILLIAM EDWARD CUNNINGHAM,	Jefferson City, Tenn.,	E. E.
WILLIAM BENNETT DUNLAP,	Ansonville,	Tex.
BENJAMIN BALLARD EGERTON,	Ingleside,	C. E.
JAMES HERBERT HELVIN,	Charlotte,	Drawing.
JERE ISAAC HERRITAGE,	Jacksonville,	C. E.
WILLIAM HERBERT HOFFMANN,	Statesville,	Agr.
HARVED SHAFTER HOWARD,	Raleigh,	M. Shop.
JESSE MCRAE HOWARD,	Wadesboro,	Tex.
EUGENE BOND HOWLE,	Raleigh,	Tex.
LEROY ELLIOTT ISLER,	Goldsboro,	Tex.
WILLIAM BRENGLE KING,	Leaksville,	M. A.
NEILL DUNCAN MCARTAN,	Fayetteville,	M. E.
WILLIAM MCNEILL MCKINNON,	Maxton,	Tex.
VIRGIL LEE NEAL,	Madison,	Agr.
CHARLEY CONNER RAMSEY,	Hickory,	M. Shop.
JAMES MAXWELL RAMSEY,	Statesville,	M. Shop.
JONATHAN RHODES SMITH,	Merry Hill,	C. E.
ALFRED DUNCAN SMITHWICK,	Sans Souci,	M. E.
ROSCOE CONKLIN TUCKER,	Fair Bluff,	M. A.
ROBERT FRANKLIN WARREN,	Gordonton,	Agr.

## Special Students.

OCTAVIO AUGUSTO ACEVEDO,	Macoris, Santo Domingo,	C. E.
WILLIE PINK AMOS,	Reidsville,	M. Shop.
JAMES WILSON AUTEN,	Charlotte,	M. Shop.
JAMES FRANKLIN BALLARD,	Louisburg,	M. Shop.
SHERWOOD BATTLE BROCKWELL,	Raleigh,	M. Shop.
CHARLES MALCOM BUTE,	Angle,	M. Shop.
ELIAS CARR CARRAWAY,	Kinston,	Tex.
LAWRENCE CUTHBERT CLAYTON,	Fair View,	M. Shop.
JOHN HENRY CUNNINGHAM,	Cullasaja,	Carpentry.
PAUL FISHER DARDEN,	Murfreesboro,	C. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
JOHN JAMES FERGUSON,	Neuse,	M. Shop.
CHESTER ROBERSON FREEMAN,		M. Shop.
PAUL JONAS HENDRICKS,	Raleigh,	M. Shop.
WILLIAM SAMUEL HOLLOWAY, JR.,	Durham,	M. Shop.
JASPER ISAAC JOHNSTON,	Haw River,	M. Shop.
WILLIAM GOODWIN JONES,	Franklinton,	M. Shop.
JOHN EVERETT KENNEDY,	Raleigh,	M. Shop.
FRED KNIGHT,	Tarboro,	M. Shop.
WILLIAM FREDERICK MCCANLESS,	Salisbury,	Agr.
BENTON BURNS MILLS,	Wadesboro,	E. E.
THOMAS PASTEUR NOE,	Beaufort,	Manual Tr.
THOMAS FIGURES NORFLEET,	Roxobel,	Boilers & E.
EDWARD MUNSON PARKER,	Heno,	M. Shop.
JAMES HENRY PICKARD,	Oakdale,	Boil. & El.
HOLMAN CALVIN RAWLS,	Durham,	Cab. Mkg.
FOYE ROBERSON,	Chapel Hill,	Chem.
EUGENE THOMAS ROBESON,	Greensboro,	M. Shop.
GARLAND ROBERSON ROSE,	Statesville,	Drawing.
LOUIS M. SMITH,	Raleigh,	Agr.
CLYDE HUNTER STEPHENS,	Durham,	M. Shop.
ASHTON LAMAR TERRY,	Raleigh,	M. Shop.
BENJAMIN WHITE THACH,	Hertford,	M. A.
GEORGE THOMAS VICK,	Littleton,	E. E.

## WINTER COURSE STUDENTS.

THOMAS NATHANIEL ALLEN,	Laws,	Dairying.
LLOYD LACY ALLISON,	Concord,	Dairying.
GEORGE HUNTER ASHMAN,	Dover, Del.,	Dairying.
RODERICK NEWTON BRYAN,	Jonesboro,	Dairying.
JAMES HILL BOSTIAN,	Statesville,	Dairying.
BIJAH ADOLPHUS CAUDLE,	Polkton,	Dairying.
EDWARD LESLIE CRAFT,	Gastonia,	Dairying.
NED DELEMAR,	Oriental,	Dairying.
GUY EDWARD FISHER,		Dairying.
THOMAS BENTON FLEMING,	Vaughan,	Dairying.
JULIAN EMMITT FLETCHER,	Durham,	Dairying.
EUGENE HARRIS FOUST,	Ore Hill,	Dairying.
EDWARD VEILIN HILL,	Westfield,	Dairying.
EVERETT CLARENCE HODGIN,	Sumner,	Dairying.
CHARLES FRANK HOUSTON,	Ore Hill,	Dairying.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
JOHN HENRY HUNTER,	Statesville,	Dairying.
OLIN P. HUTCHINSON,	Charlotte,	Dairying.
ROBERT JACOB JONES,	Mt. Airy,	Dairying.
JAMES PALMER LEWIS,	Gastonia,	Dairying.
WILLIAM SHADE LOVELL,	Pine Ridge,	Dairying.
ADASON MAURICE McKEITHAN,	Regan,	Dairying.
FULLER MONROE,	Eagle Springs,	Dairying.
RICHARD ELISHA MORGAN,	Turnpike,	Dairying.
JOHN RUFAS MORRISON,	Statesville,	Dairying.
FRED PHILIPS, JR.,	Tarboro,	Dairying.
CHARLES ELLIOTT RITCHIE,	Saw,	Dairying.
THOMAS HILARY WAGONER,	Montland,	Dairying.
JAMES RICHARDSON WHITE,	Bunn,	Dairying.
FRANK GRAHAM WILLIAMS,	Inez,	Dairying.
WILLIAM PATTERSON WILSON,	Madison,	Dairying.

# THIRTEENTH ANNUAL COMMENCEMENT.

May 28, 1902.

## BACHELORS OF AGRICULTURE.

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
JUNIUS SIDNEY CATES,	Swepsonville,	Alamance.
JOHN LUTHER MCKINNON,	Laurinburg,	Scotland.

## BACHELORS OF ENGINEERING.

### In Civil Engineering.

JAMES LUMSDEN FEREBEE,	Belcross,	Camden.
LAURIE MOSELEY,	Kinston,	Lenoir.
JAMES LAFAYETTE PARKER,	Cypress Creek,	Bladen.
RUSSELL ELSTNER SNOWDEN,	Snowden,	Currituck.

### In Electrical Engineering.

WILLIAM DAVID BOSEMAN,	Rocky Mount,	Edgecombe.
ROBERT BAXTER COCHRAN,	Statesville,	Iredell.
VASSAR YOUNG MOSS,	Zacho,	Granville.
CHARLES ARTHUR NICHOLS,	Bernard,	Buncombe.
WILLIAM BENEDICT REINHARDT,	Reinhardt,	Lincoln.
CLEVELAND DOUGLAS WELCH,	Waynesville,	Haywood.

### In Textile Industry.

ROBERT IRVING HOWARD,	Conetoe,	Edgecombe.
JOSEPH PLATT TURNER,	Norwood,	Stanly.

## PRIZES IN AGRICULTURE.

### First Prize.

JAMES CLAUDIUS BEAVERS,	Morrisville,	Wake.
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### Second Prize.

JAMES OSCAR MORGAN,	Etowah,	Henderson.
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**CHAMBERLAIN PRIZE.****For Best Kept Account of Expenses.**

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
HILL McIVER HUNTER,	Greensboro,	Guilford.

**For the Least Unnecessary Expenses.**

ARTHUR LEE PASCHAL,	Vaughan,	Warren.
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**HONORS IN SCHOLARSHIP.****Senior Class.**

JAMES LAFAYETTE PARKER,	Cypress Creek,	Bladen.
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**Sophomore Class.**

JARVIS BENJAMIN HARDING,	Greenville,	Pitt.
GEORGE HERBERT HODGES,	Kinston,	Lenoir.
ERNEST EDWIN LINCOLN,	Kinston,	Lenoir.
WILLIAM RICHARDSON,	Selma,	Johnston.

**Freshman Class.**

ELLIOTT BRANTLEY EARNSHAW,	Raleigh,	Wake.
CHARLES ALVIN SEIFERT,	Spray,	Rockingham.
JOHN ENOCH WILLIAMS,	Cadez,	Lenoir.

**Short Course Class—First Year.**

CHARLES MARION HAMILTON,	Charlotte,	Mecklenburg.
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**HONORS FOR PUNCTUALITY.****Senior Class.**

WILLIAM DAVID BOSEMAN,	Rocky Mount,	Edgecombe.
------------------------	--------------	------------

**Junior Class.**

JOHN HOWARD GLENN,	Crowder's Creek,	Gaston.
EMIL GUNTER,	Pierson, Fla.	
EDMOND SHAW LYTCHE,	Laurinburg,	Franklin.
GEORGE GATES STRADLEY,	Asheville,	Buncombe.

**Sophomore Class.**

<i>Name.</i>	<i>Post-office.</i>	<i>County.</i>
WILLIAM ALEXANDER BARRETT,	White Store,	Anson.
PAUL STIREWALT GRIERSON,	Mooreville,	Iredell.
JARVIS BENJAMIN HARDING,	Greenville,	Pitt.
GEORGE HERBERT HODGES,	Kinston,	Lenoir.

**Freshman Class.**

OSCAR LUTHER BAGLEY,	Jackson,	Northampton.
ODIS HILDRETH HENDERSON,	Hampstead,	Pender.
JAMES HERRITAGE KOONCE,	Richlands,	Onslow.

**Short Course—Second Year.**

HENRY BROZIER CARTWRIGHT,	Elizabeth City,	Pasquotank.
JOHN KENNETH MCFADYEN,	Cameron,	Moore.

# REGISTER OF ALUMNI.

## CLASS OF 1893.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROBERT WILSON ALLEN, Principal of High School.	B. E.,	Reidsville, N. C.
SAMUEL ERSON ASBURY, M. S. 1896. Assistant Chemist State Agricultural Department.	B. S.,	Raleigh, N. C.
HENRY EMIL BONITZ, Architect.	B. E.,	Wilmington, N. C.
FRANK FULLER FLOYD, Superintendent Linotype Machines for <i>Knoxville Sentinel</i> .	B. E.,	Knoxville, Tenn.
CHARLES DUFFY FRANCKS, Farmer and Merchant.	B. E.,	Richlands, N. C.
EDWARD MOORE GIBBON, • Southern Railroad Company.	B. E.,	Greensboro, N. C.
GEORGE PENDER GRAY, Farm Manager.	B. S.,	Silver Lake, Fla.
CHARLES BOLLING HOLLADAY, Treasury Department The Dupont Co.	B. E.,	Wilmington, Del.
WILLIAM McNEILL LYTCHE, Locomotive Engineer.	B. E.,	Louisburg, N. C.
WALTER JEROME MATHEWS, Electrician and Chief Engineer for the Eastern N. C. Asylum for the Insane.	B. E.,	Goldsboro, N. C.
JAMES WILLIAM MCKOY, Civil Engineer and Merchant.	B. E.,	Black Mountain, N. C.
FRANK THEOPHILUS MEACHAM, M. S. 1894. Farm Superintendent State School for Deaf and Dumb.	B. S.,	Morganton, N. C.
CARL DEWITT SELLARS, Engineer for Cone Manufacturing Co.	B. E.,	Greensboro, N. C.
CHARLES EDGAR SEYMOUR, Dairy Farm and Stock-raising.	B. S.,	Louisburg, N. C.
BUXTON WILLIAMS THORNE, Assistant Cashier Merchants and Farmers Bank.	B. E.,	Holly Springs, Miss.
WILLIAM HARRISON TURNER, Secretary and Treasurer Wachovia Mills (F. & H. Fries).	B. E.,	Salem, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES BURGESS WILLIAMS, M. S. 1896. Assistant Chemist State Agricultural Department.	B. S.,	Raleigh, N. C.
LOUIS THOMAS YARBOROUGH, Mailing Clerk.	B. E.,	Raleigh, N. C.
SAMUEL MARVIN YOUNG, Of S. M. & W. J. Young.	B. E.,	Raleigh, N. C.

---

### CLASS OF 1894.

CHARLES EDWARD CORPENING, Farmer and Dealer in Lumber and Real Estate.	B. E.,	Lenoir, N. C.
DAVID COX, JR., Architect and County Surveyor.	B. E.,	Hertford, N. C.
ROBERT DONNELL PATTERSON, JR., M. S. 1898. With American Tobacco Co.	B. S.,	Durham, N. C.
CHARLES PEARSON, Civil Engineer.	B. E.,	Hattiesburg, Miss.
ZEBBIE GEORGE ROGERS, Secretary and Treasurer.	B. E.,	Danville, Va.
JOHN HYER SANDERS, Locomotive Engineer N. & C. R. R.	B. E.,	Pinners Point, Va.
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JOHN McCAMY WILSON, Chief Engineer Spartanburg Railway, Gas and Electric Co.	B. E.,	Spartanburg, S. C.

---

### CLASS OF 1895.

*THOMAS MARTIN ASHE, Architect—Pearson & Ashe.	B. E.,	Raleigh, N. C.
JAMES ADRIAN BIZZELL, M. S. 1900. Graduate Student and Fellow in Chemistry Cornell University.	B. S.,	Ithaca, N. Y.
JOHN ISHAM BLOUNT, C. E. 1897. M. E. Cornell University. Chief Draughtsman Tennessee Coal, Iron, Steel R. R. Co.	B. E.,	Ensley, Ala.
JAMES WASHINGTON BRAWLEY, Traveling Salesman.	B. S.,	Mooreville, N. C.
WALTER AUSTIN BULLOCK, Superintendent Tobacco Farm.	B. S.,	Climax, Ga.

---

\*Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DAVID CLARK (M. E. Cornell Univ.),	B. E.,	Charlotte, N. C.
M. E. 1896. C. E. 1897. General Manager and Treasurer Ada Cotton Mills and President Eugenia Manufacturing Co., Jonesboro, N. C.		
GEO. WASHINGTON CORBETT, JR.,	B. E.,	Durham, N. C.
Machinist and Chief Engineer Durham Traction Co.		
EDWIN SPEIGHT DARDEN,	B. S.,	Wilson, N. C.
With W. T. Clark & Co., Tobacconists.		
WILLIAM KEARNEY DAVIS, JR.,	B. E.,	Marion, S. C.
JOSEPH CHARLES DEY,	B. S.,	Norfolk, Va.
With Williams Bros.		
LEE BORDEN ENNETT,	B. S.,	Cedar Point, N. C.
Farmer.		
ISAAC HENRY FOUST,	B. E.,	Ramseur, N. C.
Farmer and Mechanic McCormick Harvesting Machine Co.		
CHARLES WILLIS GOLD,	B. S.,	Wilson, N. C.
Business Manager <i>Wilson Times</i> , Editor <i>Dixie Farmer</i> .		
WILLIAM HENRY HARRIS,	B. E.,	Atlanta, Ga.
M. E. 1896. Constructing Engineer Stuart W. Cramer Co.		
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B. S. 1899. With Commercial and Farmers Bank.		
MALCOLM BEALL HUNTER,	B. E.,	Philadelphia, Pa.
Textile Designer.		
SAMUEL CHRISTOPHER McKEOWN,	B. E.,	Cornwell, S. C.
Superintendent Machine Shops.		
MANN CABE PATTERSON,	B. E.,	Durham, N. C.
With Richmond Locomotive and Machine Works.		
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U. S. Soil Survey.		
VICTOR VASHTI PRIVOTT,	B. E.,	Lexington, N. C.
U. S. Department of Agriculture, Bureau of Soils.		
HOWARD WISWALL, Jr.,	B. E.,	Norfolk, Va.
Inspector United States Engineers.		
CHARLES GARRETT YARBOROUGH,	B. E.,	Pittsburg, Pa.
With Westinghouse Electric Company.		
CHARLES MARCELLUS PRITCHETT,	M. E.,	Rock Hill, S. C.
C. E. 1896. With Catawba River Power Co.		

## CLASS OF 1896.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DANIEL ALLEN,	B. S.,	Raleigh, N. C.
	Of Pool & Allen.	
GEORGE STRONACH FRAPS,	B. S.,	Raleigh, N. C.
Ph. D. Johns Hopkins University; Assistant Professor of Chemistry		
N. C. College of Agriculture and Mechanic Arts.		
MARION JACKSON GREEN,	B. S.,	Charlotte, N. C.
Foreman Cole Manufacturing Co.		
JOHN HOWARD,	B. S.,	Middleboro, Ky.
Civil Engineer Southern Railroad Co.		
WILLIAM COLBERT JACKSON,	B. S.,	Ayden, N. C.
General Merchant.		
ROBERT GRAHAM MEWBORNE,	B. S.,	Louisville, Ky.
Chemist Kentucky Tobacco Product Co.		
LEVI ROMULUS WHITTED,	B. S.,	Portsmouth, Va.
C. E. 1897. Draughtsman in Navy-yard.		
HENRY LLOYD WILLIAMS,	B. S.,	Merchant Mills, N. C.
Merchant.		

## CLASS OF 1897.

JOSEPH SAMUEL BUFFALOE,	B. S.,	Garner, N. C.
Physician.		
JOHN WILLIAM CARROLL,	B. S.,	Baltimore, Md.
Medical Student University of Maryland.		
CHARLES EDWARD CLARK,	B. S.,	Charlotte, N. C.
Truck Farmer.		
WM. ALEXANDER GRAHAM CLARK,	B. S.,	Jonesboro, N. C.
M. E. Cornell Univ. General Manager and Treasurer Eugenia Mfg. Co.		
NICHOLAS LOUIS GIBBON,	B. S.,	Greenville, S. C.
Mill Architect and Engineer.		
CEBURN DODD HARRIS,	B. S.,	Ithaca, N. Y.
Assistant Chemist N. C. Department of Agriculture and Assistant in		
Analytical Chemistry Cornell University.		
JERE EUSTIS HIGHSMITH,	B. S.,	Parkersburg, N. C.
Farmer.		
CLYDE BENNETT KENDALL,	B. S.,	Washington, D. C.
U. S. Geological Survey.		

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
SYDNEY GUSTAVUS KENNEDY, With Newport News Ship Building Co.	B. S.,	Newport News, Va.
JOSEPH LAWRENCE KNIGHT, Turpentine Business.	B. S.,	Jacksonville, Fla.
WALTER JONES MCLENDON, JR., Superintendent Wadesboro Cotton Mill,	B. S.,	Wadesboro, N. C.
REPTON HALL MERRITT, Book-keeper Cotton Mill.	B. S.,	McAdenville, N. C.
ALBERT HICKS OLIVER, Dairyman and Farm Superintendent.	B. S.,	New Orleans, La.
HUGH WILLIAM PRIMROSE, M. S. 1900.	B. S.,	Colorado Springs, Col.
WILLIAM HUNTER SAUNDERS, Chief Engineer Roanoke Navigation and Water Power Co.	B. S.,	Roanoke Rapids, N. C.
THOMAS JEHU SMITHWICK, Electrical Engineer Navy-yard.	B. S.,	Port Royal, S. C.
LEA WATSON, Mechanical Engineer.	B. S.,	Atlanta, Ga.
*BRADLEY JEWETT WOOTEN, Lieutenant U. S. Army.	B. S.,	Wilmington, N. C.

---

### CLASS OF 1898.

DORSEY FROST ASBURY, Draughtsman Newport News Ship Building and Dry Dock Co.	B. S.,	Newport News, Va.
SIDNEY HAMILTON BECK, Draughtsman Newport News Ship-yards.	B. S.,	Newport News, Va.
ANSON ELIKEM COHOON, With Forestry Division Department of Agriculture.	B. S.,	Washington, D. C.
HUGH McCULLOM CURRAN, With Forestry Division Department of Agriculture.	B. S.,	Washington, D. C.
BENJAMIN CAREY FENNELL, M. E. 1900. Engineer and Salesman D. A. Tompkins Co.	B. S.,	Charlotte, N. C.
ALPHEUS ROUNTREE KENNEDY, Draughtsman Eastern Ship Building Co.	B. S.,	Grantan, Conn.
FREDERICK CREECY LAMB, Assistant Chemist N. C. Department of Agriculture.	B. S.,	Raleigh, N. C.

---

\*Deceased.



<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
EDWIN BENTLEY OWEN, Instructor in English N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
MOORE PARKER, Assistant in Carding and Spinning Clemson Agricultural College.	B. S.,	Clemson, S. C.
NUMA REID STANSEL, Electrical Engineer U. S. Navy Yard.	B. S.,	Norfolk, Va.
TEISAKU SUGISHITA, Engineer Imperial Railway of Japan.	B. S.,	Tokyo, Japan.
GEORGE FREDERICK SYME, Civil Engineer with West Virginia Central Railway.	B. S.,	Franklin, W. Va.

---

### CLASS OF 1899.

WM. DAVIDSON ALEXANDER, JR., Assistant Superintendent Mecklenburg Iron Works.	B. S.,	Charlotte, N. C.
IRA WILSON BARBER, Electrical Machinist Naval Station.	B. S.,	Port Royal, S. C.
JOHN HENDERSON BIRDSONG, Chemist Woodward Iron Co.	B. S.,	Woodard, Ala.
FRANCIS MARION FOY, Teacher.	B. S.,	Scotts Hill, N. C.
ALBERT SIDNEY LYON, Superintendent Roanoke Navigation and Water Power Co.'s Electrical Power Plant.	B. S.,	Roanoke Rapids, N. C.
CARROLL LAMB MANN, Instructor in Civil Engineering,	B. S.,	Raleigh, N. C.
O'KELLY WILLIAM MYERS, Civil Engineer, with S. A. L.	B. S.,	Washington, D. C.
EUGENE LEROY PARKER, Chemist Tennessee Phosphate Co.	B. S.,	Mt. Pleasant, Tenn.
EUGENE GRAY PERSON, Book-keeper Gibson Manufacturing Co.	B. S.,	Concord, N. C.
FREDERICK ERASTUS SLOAN, Registrar N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
ANDREW THOMAS SMITH, Erecting Machinist The Lloyd-Booth Co.	B. S.,	Youngstown, Ohio.
ALEXIS PRESTON STEELE, Of J. C. Steele & Son's Brick Machinery Co.	B. S.,	Statesville, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
WILLIAM ANDERSON SYME, Instructor in Chemistry N. C. College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
HUGH WARE, Assistant Chemist Tennessee, Coal, Iron, and Railroad Co.	B. S.,	Bessemer, Ala.
CLAUD BURGESS WILLIAMS, Student University College of Medicine.	B. S.,	Richmond, Va.

---

### CLASS OF 1900.

KEMP ALEXANDER, With Windemere Knitting Mills.	B. E.,	Albemarle, N. C.
LESLIE LYLE ALLEN, Draughtsman Newport News Ship Building Co.	B. E.,	Neport News, Va.
ROBERT LINN BERNHARDT, With Salisbury Hardware and Furniture Co.	B. S.,	Salisbury, N. C.
LESLIE GRAHAM BERRY, With American Bridge Co.	B. E.,	Wilmington, Del.
JAMES HARRY BUNN, Assistant Secretary Henderson Cotton Mill	B. E.,	Henderson, N. C.
SAMUEL MERRILL HANFF, Theological Student University of the South.	B. S.,	Sewanee, Tenn.
GEORGE ROWLAND HARRELL, Chemist Copperfield Mines.	B. S.,	Copperfield, Vt.
HENRY ALLEN HUGGINS, Chemist Caraleigh Phosphate Co.	B. S.,	Raleigh, N. C.
GARLAND JONES, JR., Chemist Armour & Co.	B. S.,	Chicago, Ill.
LOUIS HENRY MANN, Student Dental College University of Maryland.	B. E.,	Baltimore, Md.
ROBERT HALL MORRISON, Assistant Superintendent Cotton Mill	B. E.,	Mariposa, N. C.
WILLIAM MONTGOMERY PERSON, Student Lehigh University.	B. E.,	Bethlehem, Pa.
JUNIUS EDWARD PORTER, S. A. L.	B. E.,	Portsmouth, Va.
ROGER FRANCIS RICHARDSON, Construction Draughtsman Bath Ship Building Co.	B. E.,	Bath, Maine.
WILLIAM EDWIN ROSE, With Wilmington Iron Works.	B. E.,	Wilmington, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
FLOYD DE ROSS,	B. E.,	Charlotte, N. C.
	Electrician.	
IRA OBED SCHAUB,	B. S.,	Urbana, Ill.
Assistant Chemist Agricultural Experiment Station.		
JOHN WADE SHORE,	B. S.,	Boonville, N. C.
	Farmer.	
WILLIAM TURNER SMITH,	B. E.,	Wilmington, N. C.
With Wilmington Iron Works.		
SOLOMON ALEXANDER VEST,	B. S.,	Tobaccoville, N. C.
ROSCOE MARVIN WAGSTAFF,	B. E.,	Newport News, Va.
With Newport News Ship Building Co.		
*GAITHER HALL WHITING,	B. S.,	Richmond, Va.
Assistant Chemist Virginia-Carolina Chemical Co.		

---

### CLASS OF 1901.

FLETCHER HESS BARNHARDT,	B. E.,	Phoenixville, Penn.
Draughtsman with Phoenix Bridge Co.		
WILLIAM OSBORNE BENNETT,	B. E.,	Wadesboro, N. C.
Farmer.		
FRED WILLIAM BONITZ,	B. E.,	Washington, D. C.
Student Columbian University.		
ZOLLY MOSBY BOWDEN,	B. E.,	Schenectady, N. Y.
Testing Department General Electric Co.		
BEDFORD JETHRO BROWN,	B. E.,	Pittsburg, Penn.
With the Westinghouse Electric Co.		
PAUL COLLINS,	B. S.,	Louisville, Ky.
Theological Student.		
WILLIAM PESCU D CRAIGE,	B. S.,	New Orleans, La.
With Peter F. Pescud, Insurance.		
WILLIAM LOIS CRAVEN,	B. E.,	Pittsburg, Penn.
Structural Draughtsman American Bridge Co.		
FELIX GRAY CRUTCHFIELD,	B. E.,	Philadelphia, Penn.
Machinist Baldwin Locomotive Works.		
GEORGE MASLIN DAVIS,	B. E.,	Winston-Salem, N. C.
With Salem Iron Works.		
WILLIAM DOLLISON FAUCETTE,	B. E.,	Savannah, Ga.
Civil Engineer S. A. L. Railway.		

---

\*Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
BENJAMIN OLIVER HOOD, Structural Draughtsman American Bridge Co.	B. E.,	Pittsburg, Penn.
MARTIN KELLOGG, Farmer.	B. Agr.,	Sunbury, N. C.
JESSE JULIAN LILES, Testing Department General Electric Co.	B. E.,	Schenectady, N. Y.
LEWIS OMER LOUGEE, Structural Draughtsman American Bridge Co.	B. E.,	Pittsburg, Penn.
CHARLES HARDEN MCQUEEN, Civil Engineer with C. E. Ludlow, C. E.	B. E.,	Durham, N. C.
WILLIAM FRANKLIN PATE, Assistant Chemist Agricultural Experiment Station.	B. S.,	Urbana, Ill.
EDWARD OSCAR SMITH, Draughtsman Newport News Ship Building and Dry Dock Co.	B. E.,	Newport News, Va.
WALTER STEPHEN STURGILL, Student U. S. Military Academy.	B. E.,	West Point, N. Y.
BEVERLY NATHAN SULLIVAN, With Winston-Salem Gas and Lighting Establishment.	B. S.,	Winston-Salem, N. C.
CHARLES AUGUSTUS WATSON, Dyeing Department Fries Manufacturing Co.	B. S.,	Winston-Salem, N. C.
BENJAMIN VADEN WRIGHT, Engineer's Office.	B. E.,	Wilmington, N. C.

---

### CLASS OF 1902.

WILLIAM DAVID BOSEMAN, Farmer.	B. E.,	Rocky Mount, N. C.
JUNIUS SIDNEY CATES, N. C. Department of Agriculture.	B. S.,	Raleigh, N. C.
ROBERT BAXTER COCHRAN, General Electric Company.	B. E.,	Lynn, Mass.
JAMES LUMSDEN FEREBEE, Civil Engineer Durham and Charlotte Railway Co.	B. E.,	Durham, N. C.
ROBERT IRVING HOWARD, McAden Cotton Manufacturing Co.	B. E.,	McAdenville, N. C.
JOHN LUTHER MCKINNON, Superintendent State Farm.	B. Agr.,	Red Springs, N. C.
LAURIE MOSELEY, Draughtsman Steel Bridge Co.	B. E.,	Burlington, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES ARTHUR NICHOLS,	B. E.,	Brevard, N. C.
	Farmer.	
VASSAR YOUNG MOSS,	B. E.,	Newport News, Va.
	Draughtsman Newport News Ship Building Company.	
JAMES LAFAYETTE PARKER,	B. E.,	Phoenixville, N. C.
	Draughtsman Phoenix Bridge Co.	
WILLIAM BENEDICT REINHARDT,	B. E.,	Seattle, Wash.
	Draughtsman Ship Yards.	
RUSSELL ELSTNER SNOWDEN,	B. E.,	West Virginia.
	Civil Engineer with A. A. Chapman.	
JOSEPH PLATT TURNER,	B. E.,	Spray, N. C.
	Superintendent of Weaving, Cotton Mill.	
CLEVELAND DOUGLASS WELCH,	B. E.,	West Raleigh, N. C.
	Graduate Student N. C. College of A. & M. Arts.	



THE  
NORTH CAROLINA COLLEGE  
OF  
AGRICULTURE AND MECHANIC ARTS,  
WEST RALEIGH.  
1903--1904.



RALEIGH :  
E. M. UZZELL & Co., STATE PRINTERS AND BINDERS,  
1904.





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## COLLEGE CALENDAR.

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1904.

Thursday, July	14,	{ Entrance examination at each county court-house, 10 A. M.
Tuesday, August	30,	{ Entrance examination at the College, 9 A. M.
Wednesday, August	31,	
Thursday, September	1,	First Term begins; Registration Day.
Thursday, November	24,	Thanksgiving Day.
Wednesday, December	21,	First Term ends.

1905.

Wednesday, January	4,	Entrance examinations.
Thursday, January	5,	Second Term begins; Registration Day.
Saturday, March	18,	Second Term ends.
Monday, March	20,	Third Term begins; Registration Day.
Sunday, May	28,	Baccalaureate Sermon.
Monday, May	29,	Alumni Day.
Tuesday, May	30,	Annual Oration.
Wednesday, May	31,	Commencement Day.

## BOARD OF TRUSTEES.

(State Board of Agriculture).

---

S. L. PATTERSON, *President ex officio*, Raleigh.

T. K. BRUNER, *Secretary ex officio*, Raleigh.

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J. B. STOKES, Windsor, Second District.

WM. DUNN, New Bern, Third District.

C. N. ALLEN, Auburn, Fourth District.

R. W. SCOTT, Melville, Fifth District.

A. T. MCCALLUM, Red Springs, Sixth District.

J. P. MCRAE, Laurinburg, Seventh District.

R. L. DOUGHTON, Laurel Springs, Eighth District.

W. A. GRAHAM, Machpelah, Ninth District.

A. CANNON, Horse Shoe, Tenth District.

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R. L. SMITH, *Secretary*, Albemarle.

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FRANK WOOD, Edenton.

E. M. KOONCE, Jacksonville.

W. H. RAGAN, High Point.

DAVID CLARK, Charlotte.

GEORGE HOWARD, Tarboro.

W. J. PEELE, Raleigh.

J. FRANK RAY, Franklin.

CHARLES W. GOLD, Wilson.

S. L. PATTERSON, Commissioner of Agriculture, *ex officio*.

GEORGE T. WINSTON, President of the College, *ex officio*.

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---

GEORGE TAYLOE WINSTON, A.M., LL.D., President and Professor of Political Economy.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

DANIEL HARVEY HILL, A.M., Professor of English.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Mathematics.

FREDERICK AUGUSTUS WEIHE, M.E., Ph.D., Professor of Physics and Electrical Engineering.

FREDERICK ELISHA PHELPS, Captain U. S. Army (retired), Professor of Military Science and Tactics.

HENRY MERRYMAN WILSON, A.B., Professor of Textile Industry.

CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Professor of Agriculture.

THOMAS MURRITT DICK, U. S. Navy, Professor of Mechanical Engineering.

TAIT BUTLER, V.S., Professor of Zoology and Veterinary Science.

FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Botany and Vegetable Pathology.

BENJAMIN WESLEY KILGORE, M.S., Lecturer on Soils and Fertilizers.

ROBERT E. LEE YATES, A.M., Assistant Professor of Mathematics.

CHALMER KIRK McCLELLAND, M.S., Assistant Professor of Agriculture.

CHARLES BENJAMIN PARK, Superintendent of Shops.

THOMAS NELSON, Instructor in Weaving and Designing.

VIRGIL WILLIAM BRAGG, Instructor in Wood-working.

THOMAS ALFRED CHITTENDEN, B.S., Instructor in Mechanical Drawing.

FRANKLIN SHERMAN, B.S.A., Instructor in Entomology.

JOHN CHESTER KENDALL, B.S., Instructor in Dairying.

CARROLL LAMB MANN, B.S., Instructor in Mathematics.

PINCKNEY GUSTAVE DEAL, Instructor in Forge Shop.

ROBERT WEISE PAGE, B.S., Instructor in Chemistry and Metallurgy.

WILLIAM GOLD MORRISON, M.A., Instructor in Chemistry.

THOMAS SIMEON LANG, B.S., C.E., Instructor in Civil Engineering.

JOSEPH SOLON WILLIAMS, A.B., Instructor in English.

GEORGE SUMMEY, JR., Ph.D., Instructor in English.

WINFRED MORSE ADAMS, B.S., Instructor in Electrical Engineering.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Instructor in Zoology and Anatomy.

JOHN HOWARD GLENN, B.E., Instructor in Drawing.

ALBERT ADAMS HASKELL, B.S., Instructor in Dyeing.

HARLLEE MacCALL, Instructor in Mathematics.

OLIVER MAX GARDNER, B.S., Instructor in Chemistry.

CHARLES FREDERICK von HERRMANN, Instructor in Meteorology.

### OTHER OFFICERS.

ARTHUR FINN BOWEN, Bursar.

FREDERICK ERASTUS SLOAN, B.S., Registrar.

Miss CAROLINE BALDWIN SHERMAN, Librarian.

BENJAMIN SMITH SKINNER, Farm Superintendent and Steward.

JAMES RUFUS ROGERS, A.B., M.D., Physician.

Mrs. DAISY LEWIS, Hospital Matron.

**AGRICULTURAL EXPERIMENT STATION DEPARTMENT.**

GEORGE TAYLOE WINSTON, A.M., LL.D., President.

BENJAMIN WESLEY KILGORE, M.S., Director.

WILLIAM ALPHONSO WITHERS, A.M., Chemist.

WILBUR FISK MASSEY, C.E., Horticulturist.

CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Agriculturist.

TAIT BUTLER, V.S., Veterinarian.

FRANK LINCOLN STEVENS, M.S., Ph.D., Biologist.

FRANKLIN SHERMAN, Jr., B.S. Agr., Entomologist.

JOHN STRANCHON JEFFREY, Poultryman.

WILLIAM GOLD MORRISON, M.A., Assistant Chemist.

JOHN CHESTER KENDALL, B.S., Assistant, Dairy Husbandry.

BENJAMIN FRANKLIN WALTON, B.S., Asst., Field Experiments.

ARTHUR FINN BOWEN, Bursar.

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**MILITARY ORGANIZATION.**

CAPTAIN FREDERICK E. PHELPS, U. S. Army (retired),  
Commandant.

**Staff.**

J. B. HARDING, Major.

M. E. WEEKS, Captain and Adjutant.

W. J. PATTON, Captain and Quartermaster.

E. E. LINCOLN, Captain and Assistant Quartermaster.

**Non-Commissioned Staff.**

W. M. CHAMBERS, Sergeant-major.

S. GRAYDON, Quartermaster Sergeant.

F. W. HADLEY, Color Sergeant.



**Band.**

E. T. ROBERSON, Instructor.  
H. L. ALDERMAN, Captain.  
B. F. HUGGINS, First Lieutenant.  
E. C. BAGWELL, Second Lieutenant.  
H. B. CARTWRIGHT, First Sergeant.  
L. M. PARKER, Second Sergeant.  
J. E. WILLIAMS, Third Sergeant.  
J. A. PARK, Fourth Sergeant.  
T. J. OGBURN, Chief Trumpeter.  
R. H. HARPER, Drum-major and First Lieutenant.

**Company A.**

WILLIAM RICHARDSON, Captain.  
P. S. GRIERSON, First Lieutenant.  
R. P. REECE, Second Lieutenant.  
JULIAN M. HOWARD, First Sergeant.  
S. N. KNOX, Second Sergeant.  
J. H. SQUIRES, Third Sergeant.  
C. T. VENABLE, Fourth Sergeant.  
D. A. COX, First Corporal.  
T. M. LYKES, Second Corporal.  
W. B. MOORMAN, Third Corporal.  
C. G. NICHOLS, Fourth Corporal.

**Company D.**

H. M. HUNTER, Captain.  
J. A. MILLER, First Lieutenant.  
W. F. MORSON, Second Lieutenant.  
O. L. BAGLEY, First Sergeant.

G. P. MYATT, Second Sergeant.  
W. H. McINTYRE, Third Sergeant.  
H. F. CHREITZBERG, Fourth Sergeant.  
H. M. TURNER, First Corporal.  
W. G. KNOX, Second Corporal.  
R. H. TILLMAN, Third Corporal.  
W. S. TOMLINSON, Fourth Corporal.

#### Company B.

G. H. HODGES, Captain.  
J. P. GULLEY, First Lieutenant.  
J. McKIMMON, Second Lieutenant.  
L. M. HOFFMAN, First Sergeant.  
S. D. WALL, Second Sergeant.  
L. G. LYKES, Third Sergeant.  
L. V. EDWARDS, Fourth Sergeant.  
S. H. CLARK, First Corporal.  
J. F. HANSELMAN, Second Corporal.  
L. MOORE, Third Corporal.  
A. W. GREGORY, Fourth Corporal.

#### Company C.

L. A. NEAL, Captain.  
W. W. BARBER, First Lieutenant.  
W. W. FINLEY, Second Lieutenant.  
E. G. PORTER, First Sergeant.  
W. L. SMITH, Second Sergeant.  
W. W. WATT, Third Sergeant.  
O. H. HENDERSON, Fourth Sergeant.  
A. D. SMITHWICK, First Corporal.

L. T. WINSTON, Second Corporal.

J. G. MORRISON, Third Corporal.

D. M. CLARK, Fourth Corporal.

**Company E.**

F. C. PHELPS, Captain.

J. C. BARBER, First Lieutenant.

JESSE M. HOWARD, Second Lieutenant.

J. D. SPINKS, First Sergeant.

C. A. SEIFERT, Second Sergeant.

S. M. VIELE, Third Sergeant.

R. C. LEHMAN, Fourth Sergeant.

C. W. HODGES, First Corporal.

J. D. CLARK, Second Corporal.

C. R. PEPPER, Third Corporal.

C. W. HEWLETT, Fourth Corporal.

**Company F.**

E. P. BAILEY, Captain.

G. W. FOUSHEE, First Lieutenant.

A. C. WHARTON, Second Lieutenant.

J. H. PEIRCE, First Sergeant.

A. T. KENYON, Second Sergeant.

G. G. LYNCH, Third Sergeant.

L. A. MURR, Fourth Sergeant.

W. F. BROCK, First Corporal.

C. W. HACKETT, Second Corporal.

D. W. ROBERTSON, Third Corporal.

G. P. ASBURY, Fourth Corporal.

## GENERAL INFORMATION.

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The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and the late R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to \$7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was donated by the late R. S. Pullen. The College was formally opened for students October 1, 1889, with one building and five teachers.

Additional funds were provided afterwards by the National Congress to aid in the support of the College and the State Agricultural Experiment Station, which is now a department of the College.

The College is beautifully located on the extension of Hillsboro street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from twelve deep wells. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred acres of land and fifteen buildings, and its teaching force consists of thirty-four specialists. Its laboratories, drawing-rooms, and work-shops are well equipped. Its library contains four thousand volumes, and its reading-room is well supplied with literary and technical journals and newspapers.

## BUILDINGS.

**The Main Building** is of brick, with brownstone trimmings, and is seventy by sixty feet; part four stories in height and the remainder two. The lower floors contain the offices of the President and the Bursar; several recitation-rooms; chemical and physical laboratories, and the armory. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated, and conveniently arranged.

**The Mechanical Engineering Building** is a plain, substantial, two-story brick building, with large annex. It contains the laboratory, drawing-rooms, recitation-rooms, and shops of the department.

**The Boiler House** is a single-story brick building, containing boilers, fire-pump, and the machinery connected with the steam-heating plant.

**Primrose Hall** is a two-story brick building, which has attached a fine range of glass structures. The lower floor is occupied by the horticultural and veterinary laboratories. The upper floor contains a large lecture-room and botanical laboratory. The plant-houses are five in number, and are immediately accessible from the lecture-rooms and laboratories.

**The Dairy and the Barn** are frame buildings of modern design, and carefully planned for the purposes to which they are devoted. The barn is fifty by seventy-two feet, and three stories high; the dairy is twenty by forty feet, and two stories high.

**The Textile Building** is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

**Watauga Hall** is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

**Pullen Hall.**—In honor of the late R. Stanhope Pullen, the greatest benefactor of the College, the large new building recently finished has been called Pullen Hall. The basement of this building is used as a dining-room, and seats five hundred students. The first story is used for library, reading-room, and lecture-rooms. The second story

serves as the College auditorium. This room is commodious, comfortable and well lighted.

**The Infirmary** is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are suitable to hospitals.

**Dormitories.**—In addition to Watauga Hall, four two-story brick buildings are used exclusively for dormitories.

The College is supplied with a steam fire-pump, reservoir, hydrants, and fire hose to protect the buildings from burning.

The third and fourth dormitories, Primrose Hall and the green-houses attached are heated by hot water; the Textile Building is heated by the Sturtevant hot-air system, and the other College buildings are heated by the Warren-Webster vacuum system of steam-heating.

## THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1877, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch of Missouri.

The Director's office is in the Agricultural Building in Raleigh and the laboratories in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, dairying, plant diseases and chemistry is carried on in the laboratories and on the College and adjoining grounds.

The Station is always glad to welcome visitors and show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It is always glad to receive and answer questions.

Publications relating to general farming matters and embodying the results of the experiments are published and sent free to all citi-

zens of the State who request them. A request addressed to the Agricultural Experiment Station, Raleigh, N. C., will bring these publications or answers to letters.

## THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending, and Road-building.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training; nor for lads lacking in physical development, mental capacity, or moral fibre; nor for those that are unable or unwilling to observe regularity, system, and order in their daily work.

## PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the student in the Freshman Class who earns the largest and the next largest amount of money by agricultural labor on the College farm.

The Arthur H. Thomas Company of Philadelphia offers to the Biological Club as a prize an "Aplanatic Triplet" hand magnifier, to be awarded for the most deserving work in biology.



The Vermont Farm Machine Company of Bellow's Falls, Vt., offers a prize of their No. 7 U. S. Separator to the student preparing the best essay on the "Making of a Dairy Farm." The value of this prize is \$100.

P. M. Sharples, West Chester, Pa., offers a prize of one-half the list price of a Separator to the student preparing the best essay on the subject "The Middle South as a Dairy Section." The value of this prize is from \$50 to \$250.

The Caraleigh Phosphate and Fertilizer Company of Raleigh, N. C., offers a prize of a ton of high-grade fertilizer to the student preparing the best essay on "Soil Fertilization." The value of the prize is \$35.

Mr. Grimes Cowper, Raleigh, offers a prize of a pure-bred registered Jersey bull to the student preparing the best essay on "The Conformation of the Dairy Sire and Cow." The value of this prize is \$50.

The MacMillan Company, New York, offers a prize of a set of Rural Science books, complete, to the student preparing the best essay on "The Farmer and His Library." The value of this prize is \$25.

Charles Scribner's Sons, New York, offer a prize of a set of books on Agriculture to the student preparing the best essay on the subject "The Farmer Should be a Student Always." The value of this prize is \$5.

The Zenner Disinfectant Company, Detroit, Mich., offers a silver medal to the student making the best report on the Live Stock Exhibit at the State Fair. The value of this medal is \$25.

The North Carolina State Fair Association offers a prize of \$5 to the student preparing the best essay on the Live Stock Exhibit at the State Fair.

## DISCIPLINE.

The College is under military discipline and the students are regularly organized into a battalion. A printed copy of rules and regulations is furnished each student on admission, and he is expected to conform to the same during his connection with the institution. The discipline is intended to secure studious and economical habits, with punctuality, system, and order in the performance of all duties. A durable uniform, which is required to be worn on all occasions, prevents extravagance and folly in dress; rooms plainly furnished and a mess-hall economically managed by the College prevent extravagance in living; regular study hours, day and night, with proper restrictions

as to visiting Raleigh, check, or at least minimize, tendencies to idleness, vice, and rowdyism.

Regular reports of scholarship and conduct are made to parents and guardians three times a year. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College. Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform school, and its work must not be hindered by the presence of young men who are grossly vicious, idle or incompetent.

### **LIBRARY AND READING-ROOMS.**

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about four thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

### **LIBRARY FACILITIES.**

The Olivia Raney Library in Raleigh, containing now about seven thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

### **STATE MUSEUM.**

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

### **COLLEGE SOCIETIES.**

Such college organizations are encouraged as tend to the formation of good character, the development of manly physical vigor, and the promotion of literary, scientific, and technical research and training.

**The Young Men's Christian Association**, containing in its membership representatives of all the Christian denominations, meets regularly each Sabbath for conference, Bible study and worship, and exerts a wholesome influence throughout the College.

Members of the Association will meet and welcome new students at the depot.

**Farmers' Institute.**—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and the writing and reading of reports on various farm operations.

**The Rural Science Club** meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

**The Biological Club** meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture.

**The Liebig Chemical Society** meets fortnightly for the discussion of chemical subjects and for review of the current chemical literature, with which the College is well supplied.

**Electrical Engineering Society.**—The members of the Society meet once a week in the physical laboratory. To review the articles on electrical engineering in the current journals is one of the chief objects of the Society. The Society has at its disposal the best periodicals, most of which are furnished free of charge by the publishers.

**The Textile Society** meets once a month for the discussion of subjects relating to cotton manufacturing. Articles in current journals are also discussed. The Society has placed in the library the best textile periodicals, some of which are furnished free of charge by the publishers.

**The Pullen, Leazar and Tenerian Literary Societies** afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

**The Athletic Association** is intended to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it promotes practice in base-ball, foot-ball, etc. The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

**The Dramatic Club** presents at least one play each year to the students and people of Raleigh. The plays selected are of high literary character, and offer full opportunities for artistic and clever acting.

**The Glee Club** is composed of about twenty young men, embracing the best musical talent of the College. It aims to give one concert each year, and afterwards to sing at various College entertainments and functions during the year.

**The Alumni Association** meets on Monday of each year preceding Commencement day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This Association has established a Student Aid Fund to assist needy students in obtaining their education at the College by making them small loans.

### REQUISITES FOR ADMISSION.

Applicants for admission must be at least sixteen years of age and must bring certificates of good moral character from the school last attended.

**To the Four Year Courses.**—Applicants for admission to the Freshman Class of all four year courses will be examined on the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation or division into paragraphs.

**To the Two Year Courses.**—Applicants for admission to the two year course in Textile Industry will take the same examinations as those required of candidates for admission to the Freshman Class. in Mechanic Arts will be examined on Arithmetic (through decimal Applicants for admission to the two year courses in Agriculture and fractions), English Grammar and Composition, and American History.

Applicants for admission to the two-year course in Agriculture, if they are twenty years of age, or over, will not be required to take the entrance examinations.

**To the Winter Courses.**—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

### TIME OF EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1904 is July 14th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail, or if there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock A. M. on Tuesday and Wednesday preceding the opening day. The dates for 1904 are August 30th and 31st.

### ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses over eighteen years of age.
2. Applicants for admission to the two-year course in Agriculture, if they are over twenty years of age.
3. School-teachers holding teachers' certificates.
4. Graduates of those High Schools and Academies whose certificates are accepted by the Faculty of this College.

### SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Wednesday in May, with a vacation of about ten days at Christmas.

### EXPENSES.

The total expenses of a student for the first year are as follows:

Tuition . . . . .	\$ 20.00
Room rent . . . . .	10.00
Fuel and lights . . . . .	12.50
Furniture . . . . .	2.00
Library . . . . .	1.00
Incidental . . . . .	1.00
Medical attention and medicine . . . . .	4.50
Physical culture . . . . .	1.00

Registration .....	\$ 2.00
Board .....	72.00
Shop (material and use of tools) .....	1.00
Drawing (material furnished) .....	1.00
Uniform and cap .....	14.30
Drawing instruments .....	8.85
Books (estimated cost) .....	5.00
Laundry (estimated cost) .....	10.00
Total expenses for year .....	<u>\$166.15</u>

A student on entering college will need about forty dollars to meet his various dues.

Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home or purchased in the city. In order to secure uniformity, dark colors (black or dark gray) are required. Students having scholarships do not pay tuition. Their total expenses are \$146.15. The first three items above, namely, tuition, room rent, and fuel and lights, amounting to \$42.50, are collected in monthly payments of \$4.75 a month, on the first of each month, with no deduction for less time than one month. The registration, furniture, and medical fees are collected one-half (\$4.25) in September, or whenever the student enters, and one-half (\$4.25) in January. Students registering on the day appointed for registration are excused from paying the registration fee. Library, incidental, and physical culture fees are collected in September, or whenever the student enters. Board is payable in installments of \$8 per month on the first day of each month from September to May inclusive. Board for less time than one month is charged for at the rate of fifty cents a day. Choice is given between paying by the month or by the day. The College Bursar is forbidden by the Trustees to give credit, and there is no deviation from this rule.

The College rooms are supplied with necessary furniture. Each student should bring with him two pairs of blankets, two pairs of sheets, two pillow-cases, and two bed-spreads for single bed.

In addition to the fees enumerated above, advanced students are required to pay fees as follows: A fee of \$1 from students taking work in biological, physical, or electrical laboratory, for material furnished. A deposit of \$3 from all Sophomores to cover breakages in chemical laboratory. Juniors and Seniors taking chemical laboratory make deposits of \$5 and \$8 respectively for the same pur-



pose. A deposit of \$3 from mining engineering Seniors to cover breakages in assaying and electro-chemical laboratory. A deposit of \$3 from Juniors and Seniors taking dyeing laboratory, to cover breakages. A deposit of \$5 from textile students to cover cost of designing, supplies, tools, etc. Any unused portion of deposits to chemical and dyeing laboratories or to the textile department will be returned at the end of the year. If the deposit made is not sufficient to cover breakages and cost of material furnished, the students are required to make good the deficiency.

### UNIFORM.

The College uniform must be worn by all students excepting winter course students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. New students are especially cautioned not to bring with them to the College a supply of citizens' clothing, as the uniform must be worn on all occasions. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home or purchased in the city. In order to secure uniformity, dark colors (black or dark gray) are required.

### FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him. A scholarship once bestowed may be retained by the holder until graduation, unless he prove neglectful of his studies or guilty of serious misconduct.

### SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from \$4 to \$10 a month. There is also occasional employment, paying from \$2.50 to \$5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very



little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

### STUDENT LOAN FUNDS.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient time is given for repayment to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, *Alumni* and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to \$672.81.

The sum of \$69.51 has been contributed by friends as a memorial to Mrs. S. C. Carroll, for many years matron of the College. This fund is also loaned to needy students.

### BOARD AND LODGING.

All students are expected to board in the College mess-hall and room in the College dormitories. An abundant supply of plain, nourishing food, with as large variety as possible, is furnished absolutely at cost. The charge at present is \$8 per month, payable in advance, with reduction in case of withdrawal during the month.

Rooms in the College dormitories are supplied with electric lights, steam heat and all necessary furniture, except sheets, blankets, pillow-cases, bed-spreads and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal. Lodging in the College buildings will not be supplied to special students, who are permitted, however, to board in the mess-hall if they so desire.

Any student over twenty-one years of age is permitted to room and board outside the College.

### CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections, at frequent intervals, are made by the College physician. There is an abundant supply of pure water from twelve deep wells. Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 10 o'clock, and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

## COURSES OF INSTRUCTION.

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The College offers the following Courses of Instruction:

### **I. Four Year Courses** leading to degrees in:

- 1st. Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).
- 2d. Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, and Mining Engineering).
- 3d. Industrial Chemistry** (including Metallurgy and Dyeing).
- 4th. Textile Industry** or Cotton Manufacturing.

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, green-houses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The Bachelor's degree is conferred upon any one who completes satisfactorily a Four Year Course.

**II. Short Courses** of two years (not leading to a degree) in Agriculture, in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machinist's Work and Drawing), and in Building and Contracting.

The Short Courses include nearly all the practical work of the Four Year Courses, with less theoretical instruction. They are intended for students who desire chiefly manual training or for those who are unable to complete the Four Year Courses.

**III. Winter Courses** in Agriculture and Dairying and in Road-building, beginning at the opening of College in January and extending to the close of the term ending in March.

**IV. Normal Courses** for the training of teachers along industrial lines.

### **V. The Summer School.**

**VI. Graduate Courses**, extending over two years and leading to advanced degrees, are intended for students who have completed the Four Year Courses and who desire further instruction and training along special lines.

## AGRICULTURAL COURSES.

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### I. The Four Year Course in Agriculture.

#### Ia. The Two Year Course in Agriculture.

#### Ib. The Winter Course in Agriculture and Dairying.

**Aim and Scope.**—The aim of the Agricultural Courses is to train young men in both the science and the practice of their profession. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

The four year course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domains of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of English Literature and of Political Economy as training studies, and reasonable attention to these studies is required.

The two year course is designed to meet the needs of those who are unable to take the longer course. It is especially devoted to the practical study of Agriculture and Horticulture, and their various branches, and the natural sciences which are so closely related to farming.

The ten weeks winter course in Agriculture is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention.

The ten weeks dairy course is a course in practical butter-making in accordance with the most approved methods of the modern creamery.

**Methods of Instruction.**—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are almost constantly assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Department of Agriculture is fitting up laboratories for investigation in Soil Physics and in the mechanical analysis of soils. The dairy department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices upon yield and upon fertility, in varieties of fruit, of vegetables, and of forage crops. The methods employed and the results obtained are freely used for instruction.

In work other than purely technical the agricultural students meet the same instructors and enjoy the same privileges as other students of the College. In all departments the laboratory method is freely employed. The student uses apparatus with his own hands and consults the literature of the subject at every step.

**Self-support while a Student.**—The Board of Agriculture, in the interest of young men who are unable to meet necessary college expenses, has appropriated \$2,000 annually for student labor. This generosity on the part of the Board enables every student to pay a good part of his college expenses; some are able to meet the entire expense this way. This sum appropriated is intended solely to pay for farm work. The work is precisely the sort of work that is done on the farm—plowing, hauling, tile-laying, feeding beef cattle, feeding dairy cattle, feeding and grooming horses, running ditches and terraces, repairing machinery and tools, harvesting crops, the care of hogs, poultry, etc.

This feature in the courses of Agriculture is helpful not only in defraying college expenses, but serves as a training and education as well.

**Requisites for Admission.**—Applicants for admission to the four year course in Agriculture must be at least sixteen years of age. They are examined in the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, and American History.

For the two year course in Agriculture no entrance examinations are required if the applicant is at least twenty years old. Applicants



Sophomore Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock and Stock-judging, 1-----	3	--	--
Principles of Breeding and Stock-judging, 2 ----	--	3	--
Stock-feeding, 3-----	--	--	3
Plant Diseases, 33-----	3	--	--
Animal Physiology, 47-----	--	3	--
Physiological Botany, 34-----	--	--	3
Inorganic Chemistry, 61-----	3	3	3
Inorganic Chemistry (laboratory), 62-----	2	2	2
Physics, 71-----	2	2	2
Free-hand Drawing, 76-----	2	--	--
Mechanical and Agricultural Drawing, 77-----	--	2	2
English, 93 and 95-----	2	2	2
Military Drill, 99-----	3	3	3

Junior Year.

Farm Equipment, 4-----	4	--	--
Soils, 5-----	--	4	--
Farm Crops, 6-----	--	--	4
Veterinary Anatomy, 41-----	4	--	--
Veterinary Medicine, 42-----	--	4	--
Veterinary Practice, 43-----	--	--	4
Agricultural Chemistry, 66-----	2	2	2
Geology, 58-----	2	2	2
Wood-work, 78-----	1	1	--
Forge-work, 79-----	1	1	--
Mechanical Technology, 80-----	1	1	--
Farm Machinery, 7-----	--	--	3
English and History, 97 and 96-----	2	2	2
Military Tactics, 100-----	1	1	1
Military Drill, 99-----	3	3	3



## Senior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
History of Agriculture, 18-----	--	--	3
<del>General Bacteriology, 36-----</del>	<del>3</del>	<del>3</del>	--
English, 96 and 94-----	2	2	2
Political Economy, 98-----	2	2	2
<del>Reader</del> Military Drill, 99-----	3	3	3
Elect ten periods of the following :			
Animal Husbandry (horses), 8-----	2	--	--
Animal Husbandry (cattle), 9-----	--	2	--
Animal Husbandry (sheep and swine), 10-----	--	--	2
Agronomy, 11-----	3	--	--
Special Crops, 12-----	--	3	--
Soil Physics and Soil Management, 13-----	--	--	3
Dairy Bacteriology, 15-----	3	--	--
Experimental Dairying, 16-----	--	3	--
Dairy Seminary, 17-----	--	--	3
Veterinary Medicine, 44-----	3	3	3
Market Gardening, 23-----	3	--	--
Forestry, 24-----	--	3	--
Landscape Gardening, 25-----	--	--	3
Plant Diseases (advanced), 37-----	2	--	--
Entomology (advanced), 52-----	--	2	--
Economic Botany, 35-----	--	--	2
Industrial Chemistry, 63-----	2	2	2
Organic Chemistry, 63-----	2	2	2
Analytical Chemistry (laboratory), 64-----	5	--	--
Agricultural Chemical Analysis (laboratory), 65-	--	5	5

Ia. The Two Year Course in Agriculture.

First Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Botany, Elementary, 31-----	3	3	--
Botany, Systematic, 32-----	--	--	3
Elementary Horticulture, 21-----	--	4	--
Pomology, 22-----	--	--	4
Dairying, 14-----	4	--	--
<del>Elementary Agricultural Chemistry, 67-----</del>	2	2	2
Arithmetic, 86-----	5	--	--
Algebra, 87-----	--	5	5
English, 91-----	3	3	3
Military Drill, 99-----	3	3	3

Second Year.

Elect seventeen periods from the following :

Breeds of Live Stock and Stock-judging, 1-----	3	--	--
Principles of Breeding and Stock-judging, 2----	--	3	--
Stock-feeding, 3-----	--	--	3
Farm Equipment, 4-----	4	--	--
Soils, 5-----	--	4	--
Farm Crops, 6-----	--	--	4
Veterinary Anatomy, 41-----	4	--	--
Veterinary Medicine, 42-----	--	4	--
Veterinary Practice, 43-----	--	--	4
Market Gardening, 23-----	3	--	--
Forestry, 24-----	--	3	--
Landscape Gardening, 25-----	--	--	3
Plant Diseases, 33-----	3	--	--
Animal Physiology, 47-----	--	3	--
Physiological Botany, 34-----	--	--	3

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Zoology, 46-----	3	--	3
Entomology, 51-----	--	3	--
Inorganic Chemistry, 61-----	3	3	3
Inorganic Chemistry (laboratory), 62-----	2	2	2
Agricultural Chemistry, 66-----	2	2	2
Wood-work, 78-----	1	1	--
Forge-work, 79-----	1	1	--
Mechanical Technology, 80-----	1	1	--
Farm Machinery, 7-----	--	--	3
Military Drill, 99-----	3	3	3

## WINTER COURSES IN AGRICULTURE AND DAIRYING.

**General Statement.**—The Winter Course in Dairying and the Winter Course in Agriculture are designed to meet the wants of young men who are ambitious to excel in their chosen vocation of farming and who feel the need of more and better preparation before taking up their life-work. The subjects presented in the two courses are those about which every young farmer should have definite and clear knowledge. In their treatment the topics are handled in such a way as to make the information to the student useful in the highest possible degree.

There is no longer any question concerning the value of advanced, definite knowledge concerning agriculture to those who follow farming; education and training pay on the farm as they do elsewhere in life.

The expenses of the course are so little, and the good to be derived so great, no young man in North Carolina can afford to miss the opportunity of getting this training so necessary in his work. The money necessary to meet the expenses for a whole term's instruction can be earned in a month or two before attending. Therefore no young man, even though he possess but a few dollars, can afford to miss the opportunity for training in his work.

The studies offered are dairying, stock-raising, creamery practice, stock-feeding, diseases of farm animals, dairy farming, breeding farm

animals, entomology, dairy chemistry, farm economics, and book-keeping. The class-room work is supplemented by practice in the creamery, barn, green-house, and work-shop.

**Equipment.**—The work in dairying, which includes butter-making, milk-testing, handling cream separators, pasteurizing cream and milk, and dairy bacteriology, is given in the Dairy Building. The building is equipped with separators, milk-testers, pasteurizer, and all tools required in making butter and preparing milk or cream for the city markets.

**Requirements for Admission.**—No entrance examination is required, but the students taking either the Dairy or Winter Course must be at least eighteen years of age and should have a common-school education.

**Expenses—College Dues.**—Each student is required to pay a laboratory fee of five dollars. Tuition and instruction are entirely free.

**Other Expenses.**—Books and note paper will cost from two to three dollars, and two white duck suits to wear in the dairy laboratory will cost one dollar each. The suits, however, are not required. Board and room may be secured for \$2.50 per week. The total expenses of the whole ten weeks need not exceed thirty dollars.

### **Ib. The Winter Course in Agriculture and Dairying.**

**Butter-making.**—This course includes all practical operations of creamery management. The student works with the guidance and under the direction of the Instructor at the same operations of butter-making, or pasteurizing, or milk-testing, until proficiency is obtained. He is required to follow the milk from the time it enters the laboratory and creamery until the product leaves it, and to determine the points in processes where losses occur and reasons why they occur. Six periods. Mr. KENDALL.

**Milk and Butter Production.**—This course consists of lectures and recitations on the methods of taking care of milk and the manufacturing of it into other products, also lectures upon construction, equipment and operation of creameries, dairies, and milk depots. Each student is required to draw a plan of a farm dairy and prepare an estimate for equipment of same. Two periods. Professor BURKETT and Mr. KENDALL.

**Feeds and Feeding and Stock-raising.**—This subject consists of an elementary study of the composition of foods; the constituents of

feeding, amount, combination and form necessary to give best results with various kinds of live stock.

The student is required to calculate digestibilities and nutritive ratios and to arrange therefrom proper feeding rations. Two periods. Professor BURKETT.

**Dairy Farming.**—Lectures are given under this subject upon the history, adaption, care and management of the different breeds of dairy cattle. Dairy animals are studied by the score card, in accordance with the practice of judging animals for dairy purposes.

Instruction will also be given upon the character of food-stuffs, the relation of food to the animal, and kind and quality of food for the best milk production. Two periods. Professor BURKETT.

**Soil Study.**—Lectures and recitations upon composition, formation, kinds and physical properties of soil and their improvement by cultivation, natural and artificial fertilizers, drainage, etc.

The work in class-room is supplemented by work in the field and soil physics laboratory. One period. Assistant Professor McCLELLAND.

**Farm Crops.**—In this subject is included rotation of crops, green manuring, and a critical study of corn and cotton; judging of corn; condition of germination and growth; and improvement by selection and breeding. One period. Assistant Professor McCLELLAND.

**Soils and Fertilizers.**—Lectures on fertilizers and fertilizing materials and on the typical classes of North Carolina soils. Two periods, five weeks. Director KILGORE.

**Farm Chemistry.**—Lectures on air, water, the chemistry of plant and animal nutrition, and the composition of milk and its products. Withers' *Syllabus*. Two periods. Mr. GARDNER.

**Plants.**—This course treats of plants in general, embracing such subjects as plant breeding, seed selection, seed testing, plant propagation and nutrition, classification, plant disease and its prevention, and bacteria and fungi in their relation to farm produce, treating of both the beneficial bacteria of farm operations and the injurious bacteria that produce disease, etc. Two periods. Professor STEVENS.

**Economic Entomology.**—This is a short course in which the more important noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Two periods. Mr. SHERMAN.

**Diseases of Live Stock.**—The lectures on this subject consist of Elementary Veterinary Anatomy and Physiology with special refer-

ence to the digestive and reproductive organs and the most common diseases and their treatment. Four periods. Professor BUTLER.

**Book-keeping.**—This subject consists of the practical study of farm accounts, supplemented by numerous original examples and sets for practice. One period. Professor HILL.

**Farm Economics.**—This is an elementary course, dealing with production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation and taxation. One period. President WINSTON.

## AGRICULTURE.

### Equipment.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred acres, with two hundred and fifty acres under cultivation; a large three-story basement barn, 50 by 72 feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay carrier. Just outside the barn are two 70-ton silos. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an eight-horse power Skinner engine. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The Dairy Building contains three rooms and cellar, and is supplied with DeLaval, Sharpless, United States, Empire, National, and Reid Separators, Babcock Testers, various kinds and makes of churns, butter-workers, and cheese apparatus, etc.

The live stock consists of necessary horses and mules, a herd of dairy cattle, a herd of Aberdeen-Angus beef cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry-yard is divided into sixteen lots. The buildings consist of incubator cellar, brooder-house, and hen-houses. Several different incubators are used. The poultry-yards contain the following breeds: White Wyandotte, White and Barred Plymouth Rock, Black Minorca, Brown Leghorn, Light Brahmas and Pekin Ducks.

### Subjects of Instruction.

**1. Breeds of Live Stock.**—Lectures and recitations upon the history, characteristics, care and management, and adaption of the different breeds of live stock. Practical exercises are given in scoring and judging the various kinds of live stock with the score card. Three periods, first term. For Sophomores and second-year students. Professor BURKETT.

**2. Principles of Breeding.**—Lectures and recitations upon the laws of inheritance, and the principles and phenomena of evolution as applicable to the improvement of animals or plants. The aim is to bring every known principle of reproduction to the assistance of the breeder's art. Practical exercise in scoring and judging live stock, and in writing and tracing pedigrees. Three periods, second term. For Sophomores and second-year students. Professor BURKETT.

**3. Stock-feeding and Hygiene.**—Lectures and exercises upon the laws of nutrition, and the character of food-stuffs, and the kind and quality of foods to produce certain results. Practical exercises in calculating digestibility, nutritive ratios and feeding standards. Three periods, third term. For Sophomores and second-year students. Professor BURKETT.

**4. Farm Equipment.**—Lectures and recitations upon selecting, planning and equipping farms; planning and erecting farm buildings; farm vehicles and machinery; power, water and drainage; practical exercise in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Four hours, first term. For Juniors and second-year students. Assistant Professor McCLELLAND.

**5. Soils.**—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air and fertilizers, and mechanical analysis. Four hours, second term. For Juniors and second-year students. Assistant Professor McCLELLAND.

**6. Farm Crops.**—Lectures and recitations upon the history, production, harvesting and marketing of farm crops. Practical exercise with growing and dried specimens of farm crops, including grasses, clovers and other forage crops. Four hours, third term. For Juniors and second-year students. Assistant Professor McCLELLAND.



**7. Farm Machinery.**—Lectures and laboratory work on the tools and machinery of the farm, in reference to their design, construction, draft, durability and care. The student is required to set up and test the various machines used on the farm. Three hours, third term. For Juniors and second-year students. Assistant Professor McCLELLAND.

**8. Animal Husbandry.**—A critical study of the horse; his breeding and management; gaits; practice in expert judging of horses. Two periods, first term. For Seniors. Professor BURKETT.

**9. Animal Husbandry.**—A critical study of beef and dairy cattle; the breeding, feeding and management, and practice in expert judging of cattle. Two periods, second term. For Seniors. Professor BURKETT.

**10. Animal Husbandry.**—A critical study of sheep and swine in reference to type, wool or mutton; pork or bacon. The breeding, feeding and management of sheep and swine, and practical exercise in expert judging sheep and swine. Two periods, third term. For Seniors. Professor BURKETT.

**11. Agronomy.**—A critical study of the farm crops, corn and cotton; judging corn; conditions of germination and growth, and improvement by selection and breeding. Three periods, first term. For Seniors. Assistant Professor McCLELLAND.

**12. Special Crops.**—Special crops will be studied by the student in the laboratory and field. Three periods, second term. For Seniors. Assistant Professor McCLELLAND.

**13. Soil Physics and Management.**—This course is designed for advanced work in the study of soils, both in the laboratory and the field. Three periods, third term. For Seniors. Assistant Professor McCLELLAND.

**14. Dairying.**—Practice and occasional lectures. The course consists in general management of modern dairying, the methods of milk analysis, the bacteriology of milk, the use of separators, the testing of milk, ripening of cream, churning, working, packing, and scoring butter. Four periods, third term. For Freshmen. Four periods, first term. For first-year students. Professor BURKETT and Mr. KENDALL.

**15. Dairy Bacteriology.**—A laboratory course in the study of bacteria in its relation to creamery, butter-making, and cheese production. Three periods, first term. For Seniors. Mr. KENDALL.

**16. Experimental Dairying.**—Laboratory practice in making butter and cheese. Three periods, second term. For Seniors. Mr. KENDALL.

**17. Dairy Seminary.**—Laboratory practice in making butter and cheese of special commercial importance. Three periods, third term. For Seniors. Mr. KENDALL.

**18. History of Agriculture and Rural Economics.**—Lectures upon the history of agriculture; present agricultural methods in various counties, cost and relation, profits of various farm operators and systems. Three periods, third term. For Seniors. Professor BURKETT.

## HORTICULTURE.

### Equipment.

Twenty-three acres of land comprise the Horticultural Experiment farm. There is ample equipment of barns, silos, stock, and machinery. There are five communicating greenhouses, separated by glass partitions so that different night temperatures can be maintained to suit the various purposes to which the houses are devoted. In addition, there is one glass structure, without heat, for the culture of foreign grapes. There is kept a general collection of plants for botanical study and for practice in Floriculture, and in two of the houses winter forcing of vegetables and fruits is carried on, in order that the students may have practice in a line of work that is rapidly assuming commercial importance in the State. The building and greenhouses are heated in the most complete manner by hot water.

The entire basement of Primrose Hall is used as a Horticultural Laboratory, where practice in grafting, potting and cross fertilization of plants is constantly going on.

### Subjects of Instruction.

**21. Elementary Horticulture.**—Four periods, first term. Required of Freshmen. Four periods, second term. Required of first-year students. Assistant Professor McCLELLAND.

**22. Pomology.**—Four periods, second term. Required of Freshmen. Four periods, third term. Required of first-year students. Assistant Professor McCLELLAND.

**23. Market Gardening.**—Lectures on the theory and practice of growing vegetables in open ground and under glass commercially. Three periods, first term. Elective for Seniors and second-year students.

**24. Forestry.**—Lectures on forest influences and methods of forest management, timbers and forest products. Three periods, second term. Elective for Seniors and second-year students.

**25. Landscape Gardening.**—Lectures on the history of the garden art and styles of ornamental gardening, planning of country places and farm-houses, and improvement of grounds in general. Three periods, third term. For Seniors and second-year students.

## BOTANY AND VEGETABLE PATHOLOGY.

### Equipment.

The biological laboratory is equipped with the books, specimens, sterilizers, microscopes, microtomes and small utensils needed in the prosecution of the work. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds of both weeds and cultivated plants, and most of the important plant diseases are represented by herbarium and alcoholic specimens. The green-house is of great utility as a source of material, for seed-testing and for conducting physiological experiments.

### Subjects of Instruction.

**31. Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The student's knowledge is made his own through field-work and independent investigation. Three periods, first and second terms. Required of Freshmen and first-year students. Professor STEVENS.

**32. Systematic Botany and Ecology.**—The student becomes acquainted with the principal orders and families of plants of North Carolina as well as with the general problems of plant classification. More attention is given to the grouping of plants into societies and to the study of plant variation and adaptation than to mere collecting and classifying. The principles of plant breeding, crossing, pollination, budding, and grafting are taught. Three periods, third term. Required of Freshmen and first-year students. Professor STEVENS.

**33. Plant Diseases.**—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi or physiologi-

cal derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores and second-year students. Professor STEVENS.

**34. Physiological Botany.**—Lectures, demonstrations and laboratory work, treating of plant nutrition, reproduction, and growth. Especial attention is given to phases of the subject bearing most directly upon plant culture. Three periods, third term. Required of Sophomores and second-year students. Professor STEVENS.

**35. Economic Botany.**—A study of the more important groups of economic plants, weeds and medicinal plants, seed-testing, nitrification, and nitrogen fixation, origin of cultivated plants and of bacteria and fungi in their relation to Agriculture, etc. Two periods, third term. Required of Seniors. Professor STEVENS.

**36. General Bacteriology.**—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Three periods, first and second terms. Required of Seniors. Professor STEVENS.

**37. Plant Disease (Advanced).**—Methods of culture and investigation of plant disease. This course is intended to prepare the student for original investigation in plant diseases. Two periods, first term. Elective for Seniors. Professor STEVENS.

## VETERINARY SCIENCE.

The object of the teaching in this department is not to turn out educated veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live stock. In addition to the work required of all students in the Agricultural courses, as outlined below, the Senior students in the four year course in Agriculture may elect to do three hours a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the Agricultural courses.

**41. Veterinary Anatomy.**—Lectures, illustrated by charts and sketches, and, when practicable, by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors and elective for second-year students. Professor BUTLER and Doctor ROBERTS.

**42. Veterinary Medicine.**—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors and elective for second-year students. Professor BUTLER and Doctor ROBERTS.

**43. Veterinary Practice.**—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and to perform minor surgical operations under the direction of the Instructor. Four periods, third term. Required of Juniors and elective for second-year students. Professor BUTLER and Doctor ROBERTS.

**44. Veterinary Medicine.**—Advanced course in veterinary medicine and surgery, with clinical practice. Three periods. For Seniors. Professor BUTLER.

## ZOOLOGY.

**46. Elementary Zoology.**—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and reading. Two terms are devoted to vertebrates and invertebrates exclusive of insects but including some of the common parasites infesting man and the domestic animals. This course is intended to present a general view of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Three periods, first and third terms. Required of Freshmen and second-year students. Doctor ROBERTS.

**47. Animal Physiology.**—A comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory experiments to illustrate principles of physiology. Three hours, second term. Required of Sophomores and second-year students. Doctor ROBERTS.

## ENTOMOLOGY.

**51. Elementary Entomology.**—Elements of insect structure and classification. Injurious insects and remedies; a, of orchards; b, of

small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade, and ornamental plants; *f*, of barn, mill and household. Three periods, second term. Required of Freshmen. Mr. SHERMAN.

**52. Entomology (Advanced).**—Systematic study of orders and families of insects, with special reference to structure, classification, life-history and habits. Lectures and laboratory practice. Two periods, second term. For Seniors. Mr. SHERMAN.

## GEOLOGY.

**58. Elementary Geology.**—Tarr's *Elementary Geology*. During the first and second terms the general principles of geology are studied with the minerals and rocks occurring in general formations. The study of the geology of North Carolina is taken up during the third term and special emphasis is laid upon its economic aspect. Two periods. Required of Juniors. Mr. MORRISON.

## CHEMISTRY.\*

**61. Inorganic Chemistry.**—Remsen's *College Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated with experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Mr. MORRISON.

**62. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the Instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HASKELL.

**63. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Elective for Seniors. Mr. HASKELL.

**64. Analytical Chemistry (Introductory).**—A discussion of methods and principles involved in chemical analysis, together with laboratory work. Talbot's *Quantitative Chemical Analysis*. The student is taught to detect the presence of the more common elements

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\*For further information, see courses in Industrial Chemistry.



in unknown substances. He is then given practice in introductory gravimetric and volumetric quantitative work. Five periods, first term. Elective for Seniors. Mr. PAGE.

**65. Agricultural Analysis.**—Laboratory work. The work of the student in quantitative analysis is continued, embracing the analysis of those substances more closely related to his work, as fertilizers, feeding-stuffs, milk, butter, etc. Five periods, second and third terms. Elective for Seniors. Mr. PAGE.

**66. Agricultural Chemistry.**—Ingle's *Agricultural Chemistry*. A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Elective for second-year students. Professor WITHERS.

**67. Agricultural Chemistry (Elementary).**—Two periods. Required of first-year students. Withers' *Syllabus*. Mr. MORRISON.

**68. Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry*. A discussion of the processes and principles involved in the more important chemical industries, particularly those whose raw materials are supplied by agriculture or whose products are utilized in agriculture. Two periods. Elective for Seniors. Professor WITHERS.

## PHYSICS.\*

**71. Elementary Physics.**—Properties of matter; fundamental units. British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Sophomores. Professor WEIHE.

## DRAWING.†

**76. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Sophomores. Mr. GLENN.

**77. Elementary Mechanical Drawing.**—Use of instruments; geometric drawing; isometric drawing; elementary projections;

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\*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shop-work, drawing and other Mechanical Engineering subjects, see course in Mechanical Engineering.



drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Sophomores. Mr. GLENN.

### SHOP-WORK.\*

**78. Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. One period, first and second terms. Required of Juniors and second-year students. Mr. BRAGG.

**79. Forge-work.**—Exercises in forging and welding; making exercises of iron; care of forge tools and fires. One period, first and second terms. For Juniors and second-year students. Mr. DEAL.

**80. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; methods of wood-working and forging; care of belting and shafting. One period, first and second terms. For Juniors and second-year students. Mr. BRAGG.

### MATHEMATICS.†

**86. Arithmetic.**—Begin with decimal fractions and complete the subject. Five periods, first term. Milne's *Standard Arithmetic*. Required of first-year students. Mr. MANN and Mr. MACCALL.

**87. Algebra.**—Up to quadratic equations. Wells's *Higher Algebra*. Five periods, second and third terms. Required of first-year students. Mr. MANN and Mr. MACCALL.

**88. Advanced Algebra.**—Wells's *Higher Algebra*. Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of Freshmen. Mr. LANG.

**89. Geometry.**—Plane and solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of Freshmen. Mr. MACCALL.

### ENGLISH.

**91. English Composition.**—A drill upon the forms of the language, the correct relation of words, the sentence, and the paragraph. Daily written exercises. Three periods. Required of first-year students. Mr. WILLIAMS and Doctor SUMMEY.

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\*For full information in regard to shop-work, drawing and other Mechanical Engineering subjects, see course in Mechanical Engineering.

†For full information in regard to Mathematics, see course in Civil Engineering.

**92. Introductory Composition and Rhetoric.**—This course in the fundamentals of rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods. Required of Freshmen. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**93. Rhetoric, Criticism, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Two periods, second term. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**94. Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

**95. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Required of Sophomores. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**96. English Literature.**—The development of English literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two hours, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

## HISTORY.

**97. English History.**—The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

## POLITICAL ECONOMY.

**98. Political Economy.**—This course deals with public problems relating to the production, distribution and exchange of wealth. The leading topics discussed are capital, wages, money, transportation and taxation. Instruction is given by lectures and text-books. Required of Seniors. Two periods. President WINSTON.

**MILITARY SCIENCE.**

**99. Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three afternoons. Required of all classes. Commandant and officers of the Battalion.

**100. Tactics.**—Theoretical instruction in the Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Outposts, Manual of Guard Duty, etc. One period. Required of Juniors. Captain PHELPS.

## ENGINEERING COURSES.

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### Four Year Courses in

- II. Civil Engineering,
- III. Mechanical Engineering,
- IV. Electrical Engineering,
- V. Mining Engineering.

### Two Year Courses in

- IIa. Building and Contracting,
- IIIa. Mechanic Arts.

### Winter Course in

- IIb. Road-building.

## COURSE IN CIVIL ENGINEERING.

The aim of the Course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and drafting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in drafting. At the same time it is recognized that a successful engineer requires a well trained mind—one that reasons logically, accurately and quickly. Therefore a thorough course is given in Pure Mathematics and in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

**II. The Four Year Course in Civil Engineering,** leading to the degree of Bachelor of Engineering.

## Freshman Year.

SUBJECTS.	PERIODS PER WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 131†-----	2	--	--
Mechanical Drawing, 132-----	--	2	2
Wood-work, 136-----	1	1	1
Forge-work, 137-----	1	1	1
Mechanical Technology, 142-----	1	1	1
Algebra, 123-----	4	4	--
Geometry, 124-----	--	--	4
Book-keeping, 129-----	1	1	1
Physics, 156-----	2	2	2
English, 188-----	3	3	3
History, 194-----	2	2	2
Military Drill, 199-----	3	3	3

## Sophomore Year.

Architecture, 115-----	2	--	--
Architectural Drawing, 116-----	2	2	2
Geometry, 124-----	4	--	--
Trigonometry, 125-----	--	4	4
Descriptive Geometry, 105-----	--	2	2
Electricity and Magnetism, 157-----	2	2	2
Inorganic Chemistry, 181-----	3	3	3
Inorganic Chemistry (laboratory), 182-----	2	2	2
English, 189 and 191-----	2	2	2
Military Drill, 199-----	3	3	3

\*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 102 and 103-----	2	2	2
Surveying (field-work), 104-----	2	2	2
Construction, 111-----	2	--	--
Mechanics, 128 -----	3	3	3
Drawing, 105 -----	2	2	2
Graphic Statics, 101 -----	--	2	2
Analytical Geometry, 126-----	4	4	--
Calculus, 127-----	--	--	4
English and History, 195 and 192--	2	2	2
Military Tactics, 200-----	1	1	1
Military Drill, 199-----	3	3	3

## Senior Year.

Mechanics of Materials, 112-----	3	--	--
Construction, 111 -----	--	2	2
Road-building, 113 -----	--	1	1
Roofs and Bridges, 109-----	3	--	--
Bridge Design, 106-----	--	3	3
Municipal Engineering, 107-----	2	2	2
Surveying (field-work), 108-----	2	3	3
Hydraulics, 110 -----	--	2	2
Calculus, 127-----	3	--	--
English, 192 and 190-----	2	2	2
Political Economy, 197-----	2	2	2
Military Drill, 199 -----	3	3	3

## IIa. The Two Year Course in Building and Contracting.

## First Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 131-----	2	--	--
Mechanical Drawing, 132-----	--	2	--
Wood-work, 136-----	2	2	--
Mechanical Technology, 142-----	1	1	1
Architecture, 115-----	2	2	2
Arithmetic, 121-----	5	--	--
Algebra, 122-----	--	5	5
Geometry, 124-----	--	--	4
English, 187-----	3	3	3
History, 193-----	2	2	2
Military Drill, 199-----	3	3	3

## Second Year.

Construction, 111-----	2	2	2
Drawing-----	2	2	2
Contracts and Specifications-----	2	--	--
Estimates and Bills of Materials-----	--	2	2
Levelling and Use of Instruments-----	--	4	4
Algebra, 123-----	4	--	--
Geometry, 124-----	4	--	--
Trigonometry, 125-----	--	4	4
Book-keeping, 129-----	1	1	1
English, 188-----	3	3	3
Military Drill, 199-----	3	3	3



**IIb. Winter Course in Road-building (January to May).**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying -----	--	1	4
Road-building (including the Survey and Location, Materials, Method of Construction, Drainage, Bridges, and Machinery)-----	--	6	6
Drawing -----	--	4	4
Trigonometry, 125-----	--	4	4

**CIVIL ENGINEERING.****Equipment.**

There is a complete equipment of all instruments necessary to civil engineering field-work.

**Subjects of Instruction.**

**101. Graphic Statics.**—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil Engineering. Professor RIDDICK.

**102. Surveying.**—Land surveying, levelling, elements of triangulation, topographical surveying, road-making. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil Engineering. Mr. LANG.

**103. Railroad Engineering.**—Reconnaissance, preliminary and location surveys, cross-sections, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil Engineering. Mr. LANG.

**104. Surveying.**—Field work. Use of instruments, compass, level, transit and plane table. Practical work in land surveying, topography, levelling, railroad surveying, working up notes and platting. Two periods. Required of Juniors in Civil Engineering. Mr. MANN.

**105. Drawing.**—Descriptive Geometry, Stereotomy. Text-book, lectures, problems and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil Engineering. Mr. LANG.

**106. Bridge Design.**—Calculation of stresses, design, specifications and estimate of cost of a wooden roof truss and a steel highway bridge. Three periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

**107. Municipal Engineering.**—Text-book, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. LANG.

**108. Surveying (Field-work).**—Triangulation and topography, surveys for sewers, water-works, etc. Two periods, first term. Three periods, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN.

**109. Roofs and Bridges.**—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges*. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

**110. Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics*. Two periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

**111. Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

**112. Mechanics of Materials.**—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials*. Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.

**113. Road-building.**—Text-book on construction of roads, streets, and pavements. Lectures on practical road-making in North Carolina. One period, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

## ARCHITECTURE.

**115. Architecture.**—Building materials, method of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

**116. Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings.

Two periods. Required of Sophomores in Civil Engineering. Mr. MANN.

### MATHEMATICS.

**121. Arithmetic.**—Milne's *Standard Arithmetic*. Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students in Mechanic Arts. Mr. MACCALL and Mr. MANN.

**122. Algebra.**—Wells' *Higher Algebra*. Up to quadratic equations. Five periods, second and third terms. Required of first-year students in Mechanic Arts. Mr. MANN, Mr. LANG and Mr. MACCALL.

**123. Advanced Algebra.**—Wells' *Higher Algebra*. Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of all Freshmen and second-year students in Mechanic Arts. Mr. YATES and Mr. MACCALL.

**124. Geometry.**—Plane and Solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of all Freshmen and of second-year students in Mechanic Arts. Four periods, first term. Required of Sophomores. Mr. YATES.

**125. Trigonometry.**—Four periods, second and third terms. Required of Sophomores. Mr. YATES.

**126. Analytical Geometry.**—Nichols' *Analytical Geometry*. Conic sections, higher plane curves, Geometry of three dimensions. Four periods, first and second terms. Required of Juniors. Mr. YATES.

**127. Calculus.**—Osborne's *Elements of Calculus*. Differential and integral, elements of differential equations. Four periods, third term. Required of Juniors. Three periods, first term. Required of Seniors. Professor RIDDICK.

**128. Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors. Mr. LANG.

**129. Book-keeping.**—The work in the text-books supplemented by numerous original examples and sets for practice. One period. Required of Freshmen. Mr. MANN and Mr. MACCALL.

## COURSES IN MECHANICAL ENGINEERING AND MECHANIC ARTS.

The regular Four Year Course in Mechanical Engineering is intended to fit the student for positions of responsibility in engineering work, and also to furnish him with a basis to carry on more advanced engineering studies. It treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers and engines.

The Two Year Course is offered to students who wish to become machinists, draughtsmen, or stationary engineers.

**III. The Four Year Course in Mechanical Engineering,** leading to the degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 131-----	2	--	--
Mechanical Drawing, 132-----	--	2	2
Wood-work, 136-----	1	1	1
Forge-work, 137-----	1	1	1
Mechanical Technology, 142-----	1	1	1
Algebra, 123-----	4	4	--
Geometry, 124-----	--	--	4
Physics, 156-----	2	2	2
English, 188-----	3	3	3
History, 194-----	2	2	2
Book-keeping, 129-----	1	1	1
Military Drill, 199-----	3	3	3

## Sophomore Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 133 -----	2	2	2
Forge-work, 138 -----	1	--	--
Pattern-making, 139 -----	--	1	1
Mechanical Processes, 143 -----	1	1	1
Geometry, 124 -----	4	--	--
Trigonometry, 125 -----	--	4	4
Electricity and Magnetism, 157 -----	2	2	2
Inorganic Chemistry, 181 -----	3	3	3
Inorganic Chemistry (laboratory), 182 -----	2	2	2
English, 189 and 191 -----	2	2	2
Military Drill, 199 -----	3	3	3

## Junior Year.

Steam-engine, 144 -----	2	2	2
Mechanics, 128 -----	3	3	3
Machine Design, 134 -----	2	2	2
Machinists' Work, 140 -----	2	2	2
Analytical Geometry, 126 -----	4	4	--
Calculus, 127 -----	--	--	4
Dynamo Machinery, 161 -----	2	2	2
English and History, 195 and 192 -----	2	2	2
Military Tactics, 200 -----	1	1	1
Military Drill, 199 -----	3	3	3

## Senior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Engineering (laboratory), 143-----	1	1	1
Machinists' Work, 141-----	3	3	2
Boiler and Engine Design, 135-----	3	4	4
Principles of Mechanism, 146-----	--	3	2
Industrial Chemistry, 183-----	--	--	2
Mechanics of Materials, 112-----	3	--	--
Boilers and Engines, 145-----	2	2	2
Calculus, 127-----	3	--	--
Hydraulics, 110-----	--	2	2
English or Political Economy, 192 and 190 or 197-	2	2	2
Military Drill, 199-----	3	3	3

## IIIa. The Two Year Course in Mechanic Arts.

## First Year.

Free-hand Drawing, 131-----	2	--	--
Mechanical Drawing, 132-----	--	2	2
Wood-work, 136-----	2	2	2
Forge-work, 137-----	1	1	1
Arithmetic, 121-----	5	--	--
Algebra, 122-----	--	5	5
English, 187-----	3	3	3
History, 193-----	2	2	2
Mechanical Technology, 142-----	1	1	1
Military Drill, 199-----	3	3	3

## Second Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 148 -----	3	3	3
Machinists' Work, 101 -----	3	3	3
Drawing, 109, or Machinists' Work, 141-----	4	4	4
Algebra, 123 -----	4	4	--
Geometry, 124-----	--	--	4
Mechanical Technology, 149-----	2	2	2
Engines and Boilers, 150-----	2	2	2
Military Drill, 199-----	3	3	3

## MECHANICAL ENGINEERING.

## Equipment.

The drawing and recitation rooms, laboratory and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are a recitation room, engineering laboratory, machine shop, forge shop, wood-turning shop, and carpenter shop. On the second floor are the office, three drawing-rooms and a library. In the latter are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required.

The laboratory is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two horse-power engine, a ten horse-power engine (both of which were built by students), a twenty-five horse-power Woodbury engine, a large Wheeler surface condenser, connected with a  $4\frac{1}{2} \times 6 \times 6$  Blake air-pump, an Ericsson hot-air pumping engine, apparatus for making analyses of flue gases, a fuel calorimeter, a large Sturtevant fan and engine, a small water motor, a Worthington water-meter, a complete Westinghouse air-brake equipment, a complete New York air-brake equipment, friction



brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, and other apparatus for making tests.

In addition to the laboratory, there is a boiler-house equipped with one thirty horse-power, and two forty horse-power horizontal return tubular boilers, and two seventy-five horse-power Babcock and Wilcox boilers, several pumps, and a jet condenser, all of which are available for experimental purposes.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 30-inch band saw; a large jig saw; a shaper or edge moulding machine, with a very complete set of moulding cutters; a 38-inch grindstone; a wood trimmer; an adjustable mitre-box; a steam glue-heater and a large assortment of screw and of bar clamps, both iron and wooden.

The forge shop is a well lighted and ventilated, neatly paved room, 30 x 40 feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis and Eagan lathe with 10-foot bed, a 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with 4-foot bed, a 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, a Brown and Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, a large emery tool-grinding machine, a small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe threading and cutting machine. The machines have full equipment of chucks, rests and tools. The benches are well provided with vises.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by a twenty-five horse-power Woodbury engine. When the shops are running one of the students has charge of the engine.

### Subjects of Instruction.

**131. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of all Freshmen and first-year students in Mechanic Arts. Mr. GLENN.

**132. Elementary Mechanical Drawing.**—Use of instruments, geometric drawing, isometric drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of all Freshmen and first-year students in Mechanic Arts. Mr. GLENN.

**133. Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores in Mechanical, Electrical and Mining Engineering. Mr. CHITTENDEN.

**134. Machine Design.**—Calculations and working drawings of machine parts, such as fastenings, shafting, hangers, couplings, bearings, belt and tooth gearing, pulleys and pipe couplings. Two periods. Required of Juniors in Mechanical Engineering. Mr. CHITTENDEN.

**135. Boiler and Engine Design.**—Calculations and working drawings of types of engines, boilers, pumps, condensers. Outline of power plant design. Three periods, first term. Four periods, second and third terms. Required of Seniors in Mechanical Engineering. Professor DICK.

**136. Wood-work.**—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. One period. Required of Freshmen. Two periods. Required of first-year students in Mechanic Arts. Mr. BRAGG and Mr. DEAL.

**137. Forge-work.**—Exercises in working with iron. Welding. Uses and care of forge tools and fires. One period. Required of Freshmen and first-year students in Mechanic Arts. Mr. DEAL.

**138. Forge-work.**—Exercises in working with steel. Tempering. Case-hardening. One period, first term. Required of Sophomores in Mechanical, Electrical and Mining Engineering. Mr. DEAL.

**139. Pattern-making.**—Exercise in making patterns of machine parts. One period, second and third terms. Required of Sopho-

mores in Mechanical, Electrical and Mining Engineering. Mr. BRAGG.

**140. Machinists' Work.**—Bench and machine-work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling and shaper-work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Seven periods. Required of second-year students in Mechanic Arts. Mr. PARK.

**141. Machinists' Work.**—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Three periods, first and second terms; two periods, third term. Required of Seniors in Mechanical Engineering. Mr. PARK.

**142. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Care of belting and shafting. One period. Required of Freshmen and of first-year students in Mechanic Arts. Mr. BRAGG.

**143. Mechanical Processes.**—Description of machines used in engineering work. Methods of pattern-making, moulding, casting and heavy forging. Description of various machine tools and methods of performing work on them; boiler-making and plate-work. One period. Required of Sophomores in Mechanical and Mining Engineering. Mr. CHITTENDEN.

**144. Steam-engine.**—Descriptive study of the simple steam-engine. Names and uses of the various parts of an engine. Various types of engines, fittings, foundations and piping. Different types of boilers and settings. Arrangement of power plants. Care of engines and boilers. Two periods. Required of Juniors in Mechanical and Mining Engineering. Two periods, first and second terms. Required of Seniors in Electrical Engineering. Professor DICK.

**145. Boilers and Engines.**—Description and theory of boilers and engines, valve gears. Elementary thermodynamics. Principles involved in engine and boiler design. Two periods. Required of Seniors in Mechanical Engineering. Professor DICK.

**146. Principles of Mechanism.**—Study of the communication of motion by gear-wheels, cams, screws, belts and link-work; automatic feed motions; epicyclic trains; parallel and quick return motions. Problems. Three periods, second term; two periods, third term. Required of Seniors in Mechanical Engineering. Professor DICK.

**147. Mechanical Engineering Laboratory.**—Practice in engine and boiler-running; valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Tests of

boilers and engines. One period. Required of Seniors in Mechanical Engineering. Professor DICK and Mr. CHITTENDEN.

**148. Mechanical Drawing.**—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blue-printing. Three periods. Required of second-year students. Mr. DEAL.

**149. Mechanical Technology.**—Classification and use of hand-tools and machines usually found in the pattern shop, foundry, and machine shop. Materials used and methods of carrying on work in these shops. Practical problems in estimating cost and material required to complete a piece of work; arrangements and sizes of belting, pulleys and shafting. Two periods. Required of second-year students. Mr. CHITTENDEN.

**150. Engines and Boilers.**—Descriptive study of ordinary engines and boilers; proper methods of handling them. Care of pumps, condensers, engine and boiler fittings. Actual practice in engine-tending, boiler-firing, and dynamo-tending is also given with this course. Two periods. Required of second-year students. Mr. CHITTENDEN.

### COURSE IN ELECTRICAL ENGINEERING.

**Object.**—The work in this department is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior year a course in designing the various electrical machines is given.

**IV. The Four Year Course in Electrical Engineering,** leading to the degree of Bachelor of Engineering.

## Freshman Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 131-----	2	--	--
Mechanical Drawing, 132-----	--	2	2
Wood-work, 136 -----	1	1	1
Forge-work, 137 -----	1	1	1
Mechanical Technology, 142 -----	1	1	1
Algebra, 123-----	4	4	--
Geometry, 124 -----	--	--	4
Book-keeping, 129 -----	1	1	1
Elementary Physics, 156-----	2	2	2
English, 188 -----	3	3	3
History, 194 -----	2	2	2
Military Drill, 199-----	3	3	3

## Sophomore Year.

Mechanical Drawing 133-----	2	2	2
Geometry, 124 -----	4	--	--
Trigonometry, 125 -----	--	4	4
Inorganic Chemistry, 181 -----	3	3	3
Inorganic Chemistry (laboratory), 182-----	2	2	2
Forge-work, 133 -----	1	--	--
Pattern-making, 139-----	--	1	1
Physical Laboratory, 158-----	1	1	1
Electricity and Magnetism, 157-----	2	2	2
English, 189 and 191 -----	2	2	2
Military Drill, 199 -----	3	3	3

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## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Dynamo Machinery, 161 -----	2	2	2
Electrical Laboratory, 159-----	2	--	--
Electrical Engineering (laboratory), 165-----	--	2	2
Machinists' Work, 140 -----	2	2	2
Mechanics, 128 -----	3	3	3
Analytical Geometry, 126-----	4	4	--
Calculus, 127-----	--	--	4
Machine Design, 134-----	2	2	2
English and History, 195 and 192-----	2	2	2
Military Tactics, 200-----	1	1	1
Military Drill, 199-----	3	3	3

## Senior Year.

Alternating Currents, 162-----	3	--	--
Light and Power Plants, 163-----	--	3	--
Telephony and Telegraphy, 164 -----	--	--	3
Electrical Engineering (laboratory), 166-----	3	4	4
Dynamo Design, 167-----	1	2	2
Steam-engine, 144-----	2	2	--
Mechanical Engineering (laboratory), 143-----	1	--	--
Industrial Chemistry, 183 -----	--	--	2
Calculus, 127-----	3	--	--
Hydraulics, 110 -----	--	2	2
Political Economy, 197-----	2	2	2
English Literature, 192 and 190 -----	2	2	2
Military Drill, 199 -----	3	3	3



## PHYSICS.

### Equipment.

The recitation rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements and tests.

### Subjects of Instruction.

**156. Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**157. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Sophomores. Professor WEIHE.

**158. Physical Laboratory.**—Measurements of length, area and volume; determinations of density; laws of forces and velocities; pendulum. Two periods. Required of Sophomores in Electrical Engineering. Mr. ADAMS.

**159. Electrical Laboratory.**—Electric and magnetic measurements. Two periods, first term. Required of Juniors in Electrical Engineering. Mr. ADAMS.

## ELECTRICAL ENGINEERING.

### Equipment.

The electrical engineering laboratory is a small brick building 30 by 50. It contains the electric light plant, consisting of a 35-horse-power automatic Skinner engine, a 11.5 K. W. 110-volt Westinghouse dynamo and a 20 K. W. 2-phase 110-volt Lincoln alternator. The laboratory contains in addition to this one 6-light T. H. arc machine, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens & Halske dynamo, connected in such a way as to give 3-phase currents, one 2-horse-power 3-phase 110-volt Gen. Elect. Co. motor, one 2 K. W. 110-volt LaRoche alternator. It also contains transformers, condensers, arc lamps, circuit breakers, etc.

The department possesses a small library of standard books on all branches of physics and electrical engineering.



### Subjects of Instruction.

**161. Dynamo Machinery.**—Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Professor WEIHE.

**162. Alternating Currents of Electricity.**—Alternating current generators and motors. Static and rotary transformers. Condensers. Three periods, first term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**163. Electric Light and Power Plants.**—Storage batteries. Transmission of electric power. Three periods, second term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**164. Telephony and Telegraphy.**—Three periods, third term. Required of Seniors in Electrical Engineering. Professor WEIHE.

**165. Electrical Engineering Laboratory.**—Standardizing of measuring instruments. Measurements of power. Characteristic curves. Two periods, second and third terms. Required of Juniors in Electrical Engineering. Mr. ADAMS.

**166. Electrical Engineering Laboratory.**—Efficiency tests of direct and alternating current dynamos and motors and of transformers. Efficiency tests of electric plants. Photometry. Three periods, first term; four periods, second and third terms. Required of Seniors in Electrical Engineering. Mr. ADAMS.

**167. Dynamo Design.**—Design of dynamos, motors, and transformers. One period, first term; two periods, second and third terms. Required of Seniors in Electrical Engineering. Professor WEIHE and Mr. ADAMS.

### COURSES IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore-dressing, metal-working, ventilation, drainage, and illumination of mines.

Students wishing to specialize in Metallurgy will please see Courses in Industrial Chemistry.

**V. The Four Year Course in Mining Engineering,** leading to the degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 131 -----	2	--	--
Mechanical Drawing, 132 -----	--	2	2
Wood-work, 136-----	1	1	1
Forge-work, 137-----	1	1	1
Mechanical Technology, 142-----	1	1	1
Algebra, 123 -----	4	4	--
Geometry, 124-----	--	--	4
Book-keeping, 129-----	1	1	1
Physics, 156-----	2	2	2
English, 188-----	3	3	3
History, 194-----	2	2	2
Military Drill, 199-----	3	3	3

### Sophomore Year.

Mechanical Drawing, 133 -----	2	2	2
Forge-work, 138-----	1	--	--
Pattern-making, 139 -----	--	1	1
Mechanical Processes, 143-----	1	1	1
Geometry, 124-----	4	--	--
Trigonometry, 125-----	--	4	4
Electricity and Magnetism, 157 -----	2	2	2
Inorganic Chemistry, 181 -----	3	3	3
Inorganic Chemistry (laboratory), 182-----	2	2	2
English, 189 and 191-----	2	2	2
Military Drill, 199-----	3	3	3

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Geology, 176-----	2	2	2
Construction, 111 -----	2	--	--
Graphic Statics, 101-----	--	2	2
Surveying, 102 and 103 -----	2	2	2
Surveying (field work), 104 -----	2	2	2
Mechanics, 128-----	3	3	3
Analytical Geometry, 126 -----	4	4	--
Calculus, 127-----	--	--	4
English and History, 195 and 192-----	2	2	2
Military Tactics, 200 -----	1	1	1
Military Drill, 199-----	3	3	3

## Senior Year.

Mining, 171 -----	--	3	3
Ore Dressing, 172 -----	2	--	--
Metallurgy, 173 -----	--	3	3
Mineralogy, 177 -----	3	--	--
Assaying, 174-----	3	--	--
Electro-Chemistry, 175-----	--	3	3
Steam Engine, 144 -----	2	2	2
Hydraulics, 110 -----	--	2	2
Calculus, 127-----	3	--	--
English, 192 and 190-----	2	2	2
Political Economy, 197 -----	2	2	2
Military Drill, 199-----	3	3	3

## MINING AND METALLURGY.

**171. Mining.**—Lectures on methods of mining, including prospecting, sinking, stoping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Three periods, second and third terms. For Seniors in Mining. Mr. PAGE.

**172. Ore Dressing.**—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Two periods, first term. For Seniors in Mining. Mr. PAGE.

**173. Metallurgy.**—Introductory; combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat-treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Three periods, second and third terms. For Seniors in Mining. Mr. PAGE.

**184. Assaying.**—Ricketts & Miller's *Notes on Assaying*. Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead and other ores; corrected assays; bullion assays; extraction tests. Three periods, first term. For Seniors in Mining. Mr. PAGE.

**185. Electro-Chemistry and Electro-Metallurgy.**—Study of the theory and applications of electrolysis and electrical heating; theory and practice of primary and secondary batteries; production, separation and purification of metals and chemicals. Lectures and laboratory practice. Three periods, second and third terms. For Seniors in Mining. Mr. PAGE.

## GEOLOGY AND MINERALOGY.

**176. Geology.**—Tarr's *Elementary Geology*. During the first and second terms the general principles of Geology are studied with the minerals and rocks occurring in general formations. The study of the Geology of North Carolina is taken up during the third term and special emphasis is laid upon its economic aspect. Two periods. For Juniors in Mining. Mr. MORRISON.

**177. Mineralogy.**—Moses & Parsons' *Mineralogy*. Crystallography; determination of physical characters of crystals; descriptive and determinative mineralogy; blowpipe analysis and the study of

the more important economic minerals, their properties, uses and methods of determination. Lectures and laboratory practice. Three periods, first term. For Seniors in Mining. Mr. PAGE.

## CHEMISTRY.

**181. Inorganic Chemistry.**—Remsen's *College Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS, Mr. PAGE, Mr. HASKELL and Mr. GARDNER.

**182. Inorganic Chemistry.**—Laboratory work. Remsen & Randall's *Laboratory Guide*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. PAGE, Mr. HASKELL and Mr. GARDNER.

**183. Industrial Chemistry.**—A discussion of the materials of Engineering. Two periods, third term. Required of Seniors in Mechanical and Electrical Engineering. Professor WITHERS.

## ENGLISH.

**187. English Composition.**—A drill upon the forms of the language, the correct relation of words, the sentence, the paragraph. Daily written exercises. Three periods. Required of first-year short course students. Mr. WILLIAMS and Doctor SUMMEY.

**188. Introductory Composition and Rhetoric.**—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**189. Rhetoric, Criticisms, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Two periods, second term. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**190. Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

**191. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Required of Sophomores. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**192. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of all Seniors. Professor HILL.

## HISTORY.

**193. American History.**—By means of a text-book supplemented by lectures and frequent assignment of topics for special study, students are in this course familiarized with the leading facts in the history of the United States. Two periods. Required of first-year students. Professor PHELPS.

**194. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**195. English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

## POLITICAL ECONOMY.

**197. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Two periods. Required of Seniors. President WINSTON.

**MILITARY SCIENCE.**

**199. Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**200. Tactics.**—Theoretical instruction in the Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies, Manual of Guard Duty, Outposts, etc. One period. Required of Juniors. Captain PHELPS.



## COURSES IN INDUSTRIAL CHEMISTRY.

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### VI. The Four Year Course in Industrial Chemistry.

#### COURSES IN CHEMISTRY.

In harmony with the general purposes for which the College was founded, the courses in chemistry are arranged to prepare young men for careers in the analytical or the operating departments of the various chemical industries. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in the applied chemical subjects bearing more directly on the course the student has selected. The fundamental principles of engineering, machinery, etc., which are almost indispensable to the successful management of chemical plants, are taught, together with the cultural studies included in the other courses.

#### Raleigh as a Chemical Center.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and artificial ice; for the extraction of cotton-seed oil; for the dyeing of cotton goods and for the tanning and dressing of leather.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station are located in Raleigh, and through the courtesy of the officials in charge of these departments our students are welcomed whenever they desire to visit them.

The Berzelius Chemical Society—composed of the professional chemists residing in Raleigh and its vicinity—invites the students of this College to attend all meetings.

The State Museum is open to the public each day from 9 o'clock A. M. to 5 o'clock P. M., and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

### Chemical Equipment.

The laboratories of general and of analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart pine, with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate seventy students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

### Dyeing Department.

The dyeing department is located in the basement of the Textile Building and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office and a room 70 by 50 which is being fitted up as a practical dye-house.

The experimental laboratory is fitted out with apparatus for carrying out various chemical operations necessary for dyeing work and also for dyeing small test samples, color matching, etc.

The dye-house is fitted out with dyeing machinery, a steam kettle, a steaming box, a printing machine, a hydro-extractor and a drying closet.

Through the kindness of the following dye-stuff dealers the College has a collection of dye-stuffs amounting to approximately nine hundred samples. As each new dye is put out the department is regularly supplied with it, and the student thus has an opportunity of becoming familiar with the latest products for commercial work. The firms to whom the department is indebted in the past are as follows:

William J. Matheson & Co. (Ltd.), New York.

Farbenfabriken of Elberfeld Co., New York.

H. A. Metz & Co. (successors to Victor Koechl & Co.), New York.  
Berlin Aniline Works, New York.

A. Klipstein & Co., New York.

C. Bischoff & Co., New York.

Kuttroff, Pickhardt & Co., New York.

New York and Boston Dyewood Co., New York.

Schoellkoff, Hartford & Hanna Co., Buffalo.

F. E. Atteaux & Co., Boston.

Read, Holliday & Sons (Ltd.), New York.

Société Anonyme des Matières Colorantes, Paris.

O. S. Janney & Co., Philadelphia.

Geisenheimer & Co., New York.

### Graduates in Chemistry.

The chemical graduates of the College are engaged in the following lines of chemical work: Manufacture of illuminating gas, manufacture of sulphuric acid, manufacture of fertilizers, manufacture of tobacco products, refining and testing of oils, metallurgy of iron, metallurgy of copper, dyeing of cotton goods, in agricultural experiment stations, in State departments of agriculture, and in teaching chemistry. These are employed in North Carolina and eight other States.

**VI. The Four Year Course in Industrial Chemistry,** leading to the degree of Bachelor of Science.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 261†-----	2	--	--
Mechanical Drawing, 262-----	--	2	2
Wood-work, 264 -----	1	1	1
Forge-work, 265 -----	1	1	1
Mechanical Technology, 268 -----	1	1	1
Algebra, 277-----	4	4	--
Geometry, 278 -----	--	--	4
Book-keeping, 283 -----	1	1	1
English, 287 -----	3	3	3
History, 294 -----	2	2	2
Physics, 251-----	2	2	2
Military Drill, 299-----	3	3	3

\*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

## Sophomore Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 226 -----	3	3	3
Inorganic Chemistry (laboratory), 227-----	2	2	2
Electricity and Magnetism, 252-----	2	2	2
Physical Laboratory, 253-----	1	1	1
Mechanical Drawing, 263 -----	2	2	2
Forge-work, 266 -----	1	--	--
Pattern-making, 267-----	--	1	1
Geometry, 278 -----	4	--	--
Trigonometry, 279 -----	--	4	4
English, 288 and 290 -----	2	2	2
Military Drill, 299 -----	3	3	3

## Junior Year.

Agricultural Chemistry, 232 -----	2	2	2
Dyeing, 236 -----	2	2	2
Dyeing Laboratory, 237 -----	2	2	2
Organic Chemistry, 228 -----	2	2	2
Analytical Chemistry (laboratory), 230 -----	5	--	--
Technical Chemical Analysis, 231 -----	--	5	5
Geology, 246-----	2	2	2
English and History, 295 and 291-----	2	2	2
Military Tactics, 300 -----	1	1	1
Military Drill, 299-----	3	3	3

**Senior Year.****GROUP A.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Industrial Chemistry, 233 -----	2	2	2
Technical Chemical Analysis, 231 -----	5	5	5
English, 291 and 289 -----	2	2	2
Political Economy, 297 -----	2	2	2
Military Drill, 299 -----	3	3	3
Elective -----	6	6	6

**GROUP B.**

FOR STUDENTS WISHING TO SPECIALIZE IN DYEING.

Chemistry of Dye-stuffs, 238 -----	--	2	2
Dyeing Laboratory, 239 -----	--	4	4
Organic Chemistry (laboratory), 229 -----	6	--	--
Industrial Chemistry, 233 -----	2	2	2
Technical Chemical Analysis, 231 -----	5	5	5
English, 291 and 289 -----	2	2	2
Political Economy, 297 -----	2	2	2
Military Drill, 299 -----	3	3	3

## GROUP C.

FOR STUDENTS WISHING TO SPECIALIZE IN METALLURGY.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Metallurgy, 241 -----	--	3	3
Assaying, 242 -----	3	--	--
Electro-Chemistry, 243 -----	--	3	3
Mineralogy, 247 -----	3	--	--
Industrial Chemistry, 233 -----	2	2	2
Technical Chemical Analysis, 231 -----	5	5	5
English, 291 and 239 -----	2	2	2
Political Economy, 297 -----	2	2	2
Military Drill, 299 -----	3	3	3

## CHEMISTRY.

**226. Inorganic Chemistry.**—Remsen's *College Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Mr. GARDNER.

**227. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. PAGE.

**228. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. For Juniors. Mr. HASKELL.

**229. Organic Chemistry.**—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry*, translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the

reactions and properties of the more important organic compounds. Some of the common dye-stuffs are prepared synthetically. Six periods, first term. For Seniors. Mr. HASKELL.

**230. Analytical Chemistry (Introductory).**—Laboratory work. Talbot's *Quantitative Analysis*. The student is taught to detect the presence of the more common elements in unknown substances. He is given practice in introductory gravimetric and volumetric quantitative work. Six periods, first term. Required of Juniors. Mr. PAGE.

**231. Technical Analysis.**—Laboratory work. The work of the student is continued in quantitative analysis, special attention being given to the analysis of those substances most closely connected with the course of the student. Five periods, second and third terms. Required of Juniors. Five periods. Required of Seniors. Mr. PAGE.

**232. Agricultural Chemistry.**—Ingle's *Agricultural Chemistry*. A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

**233. Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry*. A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Two periods. Required of Seniors. Professor WITHERS.

## DYEING.

**236. Dyeing.**—Lectures. Fraps' *Principles of Dyeing*. The textile fibres are studied. Special attention is paid to the cotton fibre, although the other fibres are studied to an extent sufficient to familiarize the student with their uses and applications. The steps necessary in preparing the fibres for dyeing, bleaching and scouring, etc., are taken up and then the application of each class of dyes to the different fibres. Typical dyes of each class are taken and studied. The student then takes up color matching, color mixing and dye testing; special attention being paid to these last courses. Finally the different methods of printing, dyeing mixed goods and mercerization are studied. Two periods. For Juniors. Mr. HASKELL.



**237. Dyeing Laboratory.**—The experiments are intended to follow the lecture course, thus making the student familiar by actual trial tests with facts brought out in the lectures. These tests are made with small skeins of yarn. The student learns the different methods of dyeing which are applicable to cotton, those which are applicable to wool, etc. Comparative tests as to fastness to washing, to light, to dilute acids, alkalies and to rubbing are made, and the samples showing each test are kept in a scrap-book. The different styles of printing are studied and special methods for dyeing. Two periods. For Juniors. Mr. HASKELL.

**238. Chemistry of Dye-stuffs.**—A study of the chemical composition of dye-stuffs with especial attention paid to their constitution and synthetical production. Two periods, second and third terms. For Seniors. Mr. HASKELL.

**239. Dyeing Laboratory.**—An advanced class in the study of the properties and modes of application of dye-stuffs and mordants, in which the student goes more into the details of the different steps of the processes. Four periods, second and third terms. For Seniors. Mr. HASKELL.

## METALLURGY.

**241. Metallurgy.**—Introductory; combustion, colorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel; the various iron and steel processes, metallography, heat treatment, mechanical treatment, chemistry. Copper; roasting, smelting, refining, wet and electrolytic processes. Gold; stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Three periods, second and their terms. For Seniors. Mr. PAGE.

**242. Assaying.**—Ricketts & Miller's *Notes on Assaying*. Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Three periods, first term. For Seniors. Mr. PAGE.

**243. Electro-Chemistry and Electro-Metallurgy.**—Study of the theory and applications of electrolysis and electrical heating; theory and practice of primary and secondary batteries; production, separation and purification of metals and chemicals. Lectures and laboratory practice. Three periods, second and third terms. For Seniors. Mr. PAGE.

## GEOLOGY AND MINERALOGY.

**246. Geology.**—Tarr's *Elementary Geology*. During the first and second terms the general principles of geology are studied with the minerals and rocks occurring in general formations. The study of the geology of North Carolina is taken up during the third term and special emphasis is laid upon its economic aspect. Two periods. For Juniors. Mr. MORRISON.

**247. Mineralogy.**—Moses & Parson's *Mineralogy*. Crystallography; determination of physical characters of crystals; descriptive and determinative mineralogy; blow-pipe analysis and the study of the more important economic minerals, their properties, uses, and methods of determination. Lectures and laboratory practice. Three periods, first term. For Seniors. Mr. PAGE.

## PHYSICS.\*

**251. Elementary Physics.**—Properties of matter; fundamental units. British and metric standard measures; definitions of force, work and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**252. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Sophomores. Professor WEIHE.

**253. Physical Laboratory.**—Measurements of length, area and volume; determinations of density; laws of forces and velocities; pendulum. One period. Required of Sophomores. Mr. ADAMS.

**254. Electrical Laboratory.**—Electric and magnetic measurements. Two periods, first term. Elective for Seniors. Mr. ADAMS.

## ELECTRICAL ENGINEERING.\*

**256. Dynamo Machinery.**—Practical units. Dynamo-electric machines. Dynamos and motors. Efficiency. Characteristic curves. Two periods. Elective for Seniors. Professor WEIHE and Mr. ADAMS.

**257. Electrical Engineering Laboratory.**—Standardizing of measuring instruments. Measurements of power. Characteristic curves. Two periods, second and third terms. Elective for Seniors. Mr. ADAMS.

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\* For full information, see course in Electrical Engineering.

**MECHANICAL ENGINEERING.\***

**261. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. GLENN.

**262. Elementary Mechanical Drawing.**—Use of instruments, geometric drawing, isometric drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Freshmen and first-year students. Mr. GLENN.

**263. Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores. Mr. CHITTENDEN.

**264. Wood-work.**—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. One period. Required of Freshmen. Mr. BRAGG.

**265. Forge-work.**—Exercises in working with iron. Welding. Uses and care of forge tools and fires. One period. Required of Freshmen. Mr. DEAL.

**266. Forge-work.**—Exercises in working steel. Tempering, case-hardening. One period, first term. For Sophomores. Mr. DEAL.

**267. Pattern-making.**—Exercises in making patterns of machine parts. One period, second and third terms. For Sophomores. Mr. BRAGG.

**268. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; methods of wood-working and forging; care of belting and shafting. One period. Required of Freshmen. Mr. BRAGG.

**269. Steam-engine.**—Descriptive study of the simple steam-engine; names and uses of the various parts of an engine; various types of engines and fittings, foundations, and piping; different types of boilers and settings; arrangements of power plants; care of engines and boilers. Two periods. Elective for Seniors. Professor DICK.

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\* For full information, see course in Mechanical Engineering.

## BOTANY.

**271. Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference-reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The student's knowledge is made his own through field work and independent investigation. Three periods, first and second terms. Elective for Seniors. Professor STEVENS.

**272. Systematic Botany and Ecology.**—The student becomes acquainted with the principal orders and families of plants of North Carolina as well as with the general problems of plant classification. More attention is given to the grouping of plants into societies and to the study of plant variation and adaptation than to mere collecting and classifying. The principles of plant breeding, crossing, pollination, budding, and grafting are taught. Three periods, third term. Elective for Seniors. Professor STEVENS.

**273. General Bacteriology.**—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Three periods. Elective for Seniors. Professor STEVENS.

## MATHEMATICS.

**277. Advanced Algebra.**—Wells's *Higher Algebra*. Begins at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first and second terms. Required of Freshmen. Mr. YATES and Mr. MACCALL.

**278. Geometry.**—Plane and Solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of all Freshmen in full courses, and second-year students in Mechanic Arts. Four periods, first term. Required of Sophomores. Mr. YATES and Mr. MACCALL.

**279. Trigonometry.**—Four periods, second and third terms. Required of Sophomores. Mr. YATES.

**280. Analytical Geometry.**—Nichols's *Analytical Geometry*. Conic sections, higher plane curves, Geometry of three dimensions. Four periods, first and second terms. Elective for Seniors. Mr. YATES.

**281. Calculus.**—Osborne's *Elements of Calculus*. Differential and integral, elements of differential equations. Four periods, third term. Elective for Seniors. Professor RIDDICK.

**282. Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Elective for Seniors. Mr. LANG.

**283. Book-keeping.**—The work in the text-books supplemented by numerous original examples and sets for practice. One period. Required of Freshmen. Mr. MANN and Mr. MACCALL.

### ENGLISH.

**287. Introductory Composition and Rhetoric.**—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Mr. WILLIAMS, and Doctor SUMMEY.

**288. Rhetoric, Criticism, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Two periods, second term. Professor HILL, Mr. WILLIAMS, and Doctor SUMMEY.

**289. Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

**290. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases and critiques required. Two periods third term. Required of Sophomores. Professor HILL, Mr. WILLIAMS, and Doctor SUMMEY.

**291. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of

study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

### HISTORY.

**294. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**295. English History.**—The first term of the Junior year is devoted to the study of English History. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

### POLITICAL ECONOMY.

**297. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. For Seniors. Two periods. President WINSTON.

### MILITARY SCIENCE.

**299. Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**300. Tactics.**—Theoretical instruction in the Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Manual of Guard Duty; Outposts, etc. One period. Required of Juniors. Captain PHELPS.



## **TEXTILE COURSES.**

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**VII. The Four Year Course in Textile Industry.**

**VIIa. The Two Year Course in Textile Industry.**

### **THE TEXTILE DEPARTMENT.**

The Textile Department is located in a new building recently erected for its use. The instruction given in this department is in the theory and practice of cotton manufacturing. The building, which is a typical cotton mill, is fully equipped with all the necessary machinery for manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying out the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces, for himself, cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

### **TEXTILE INSTRUCTION.**

In this department two courses of instruction are offered, the Four Year Course, leading to the degree of Bachelor of Engineering, and the Short Course. The Four Year Course combines with the textile instruction certain practical and theoretical subjects which enable the student to understand better his special work. The textile instruction begins in the Sophomore year and is the principal work of the Junior and Senior years. The Short Course is offered to those mature students who cannot spend the time required for the Four Year Course. To be successful in the Short Course the student should have had a good preparation in his early studies, especially in mathematics, and some practical experience. To enter this course the student is required to pass the full entrance examinations for the Freshman Class in College, and must satisfy the professor in charge of his ability to go on with the work. Combined with the textile instruction



are certain practical subjects which aim to increase the skill of the student.

The textile instruction given is of a practical nature, and covers the entire ground of cotton manufacturing. Its object is to prepare the student for a useful career in this industry. There is a demand from the mills in this and other States for young men technically trained in the manufacture of cotton goods, especially of the finer grades. That the graduates are meeting with success in this industry is shown by the positions held by them. Among these are president, secretary and treasurer, manager, superintendent, designer, overseer of weaving, mill architect, machinery salesman. In fact, the graduates have gone into almost every branch of cotton manufacturing, and have met with success. All have received the same training; the point to which each has advanced has depended upon the ability to deal with the general problems of manufacturing.

### TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus, just beyond the Horticultural Building. It is a two-story brick building 125x75 feet, with a basement, erected from the plans of The D. A. Tompkins Co., Charlotte, N. C. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class-room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton mill machinery manufactured by American builders. The following is a list of the machines and their makers:

#### Carding Department.

**Opening-room.**—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

**Carding-room.**—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine

Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettie Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head with coiler, metallic rolls, and improved evener motion, made by Saco and Pettie Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettie Machine Shops, Newton Upper Falls, Mass. One 36-spindle slubber for 11x5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9x4½-inch bobbin, made by Saco and Pettie Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7x3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6x2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

### Spinning Department.

**Spinning-room.**—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp; one 64-spindle spinning frame for filling, made by Saco and Pettie Machine Shops, Biddeford, Me.

**Spooling, Twisting, and Winding.**—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 72-spindle twister, one-half for wet, one-half for dry twisting, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 50-spindle reel, made by Draper Company, Hopedale, Mass. One

6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

### Weaving Department.

**Warp Preparation.**—One 12-spindle bobbin winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine complete, made by The T. C. Entwistle Co., Lowell, Mass.

**Looms.**—One Northrop-Draper print-cloth loom; one Northrop-Draper sateen loom; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Two high-speed sheeting looms, made by Kilburn & Lincoln, Fall River, Mass. One sheeting loom, one 12-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom; one 2x1 box loom; one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One Crompton 4x1 box gingham loom; one Crompton 4x1 box loom with 20-harness dobby; one Crompton single box loom with 400 hook Jacquard machine; one Knowles Gem loom with 4x4 box; one Stafford single box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass.

### Dyeing Department.

The dyeing department is located in the basement of the Textile building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office and a room 70x50 feet, which is being fitted up as a practical dye-house.

The experimental laboratory is fitted out with apparatus for carrying out various chemical operations necessary for dyeing work and also for dyeing of small test samples, color-matching, etc. The dye-house is fitted out with dyeing machinery, a steam kettle, a steaming box, a printing machine, a hydro extractor and a drying closet.

Through the kindness of the following dye-stuff dealers the College has a collection of dye-stuffs amounting to approximately nine hundred samples. As each new dye is put out the department is regularly supplied with it, and the student thus has an opportunity of becoming familiar with the latest products for commercial work.

The firms to whom the department is indebted in the past are as follows:

Wm. J. Matheson & Co., Ltd., N. Y.  
Farbenfabriken of Elberfeld Co., N. Y.  
H. A. Metz & Co., N. Y. (successors to Victor Koechl & Co.).  
Berlin Analine Works, N. Y.  
A. Klepstein & Co., N. Y.  
C. Bischoff & Co., N. Y.  
Kuttroff, Pickhardt & Co., N. Y.  
New York and Boston Dyewood Co., N. Y.  
Schoellkoff, Hartford & Hanna Co., Buffalo, N. Y.  
F. E. Atteaux & Co., Boston, Mass.  
Read, Holliday & Sons, Ltd., N. Y.  
Societe Anonyme des Matieres, Colorantes, Paris.  
O. S. Janney & Co., Philadelphia.  
Geisenheimer & Co., N. Y.

### **Power and Power Transmission.**

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

Pulleys, shafting, hangers, and couplings, made by Jones & Laughlins, Ltd., Pittsburg, Pa.

Belting, made by Faerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

### **Heating Plant.**

Steam Coils and Blowing Fan, made by B. F. Sturtevant Co., Boston, Mass.

VII. The Four Year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

### Freshman Year.

SUBJECTS.	PERIODS PER WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 316† -----	2	--	--
Mechanical Drawing, 317 -----	--	2	2
Wood-work, 319-----	1	1	1
Forge-work, 320-----	1	1	1
Mechanical Technology, 323-----	1	1	1
Algebra, 336 -----	4	4	--
Geometry, 337-----	--	--	4
Book-keeping, 339-----	1	1	1
Elementary Physics, 331 -----	2	2	2
English, 341-----	3	3	3
History, 346-----	2	2	2
Military Drill, 349-----	3	3	3

### Sophomore Year.

Carding and Spinning, 301 -----	2	2	2
Mechanical Drawing, 318 -----	2	2	2
Electricity and Magnetism, 332 -----	2	2	2
Geometry, 337-----	4	--	--
Trigonometry, 338-----	--	4	4
Inorganic Chemistry, 311 -----	3	3	3
Inorganic Chemistry (laboratory), 312-----	2	2	2
English, 342 and 344-----	2	2	2
Military Drill, 349-----	3	3	3

\* The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

† The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

## Junior Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301 -----	3	3	3
Weaving, 302 -----	3	3	3
Textile Designing, 303 -----	3	3	3
Dyeing, 306 -----	2	2	2
Dyeing (laboratory), 307 -----	2	2	2
Organic Chemistry, 313 -----	2	2	2
English and History, 347 and 345 -----	2	2	2
Military Tactics, 350 -----	1	1	1
Military Drill, 349 -----	3	3	3

## Senior Year.

Carding and Spinning, 301 -----	4	4	4
Weaving, 302 -----	4	4	4
Textile Designing, 303 -----	3	3	3
Steam-engine, 325 -----	2	2	2
English, 345 and 343 -----	2	2	2
Political Economy, 348 -----	2	2	2
Military Drill, 349 -----	3	3	3

## VIIa. The Two Year Course in Textile Industry.

## First Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301-----	3	3	3
Weaving, 302-----	3	3	3
Textile Designing, 303-----	3	3	3
Free-hand Drawing, 316-----	2	--	--
Mechanical Drawing, 317-----	--	2	2
Wood-work, 319-----	1	1	1
Forge-work, 320-----	1	1	1
Mechanical Technology, 323-----	1	1	1
English, 341-----	3	3	3
Military Drill, 349-----	3	3	3

## Second Year.

Carding and Spinning, 301-----	4	4	4
Weaving, 302-----	4	4	4
Textile Designing, 303-----	3	3	3
Mechanical Drawing, 318-----	2	2	2
Forge-work, 321-----	1	--	--
Pattern-making, 322-----	--	1	1
Mechanical Processes, 324-----	1	1	1
English, 342 and 344-----	2	2	2
Military Drill, 349-----	3	3	3



### Description of Subjects.

**301. Carding and Spinning.**—Lectures and recitations; practice in operating card and spinning-room machinery. Cotton; classifying the plant, its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; cards; railway-heads; drawing-frames; slubbers; intermediates; speeders; jacks. Ring spinning-frames and mules. Spoolers and warpers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Required of Sophomores, Juniors and Seniors in the full course and of first and second-year students in the short course. Professor WILSON.

**302. Weaving.**—Lectures and practice in warp preparation, operating and fixing looms, cloth finishing machinery. Warp preparation; pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing; steam cylinder slasher; hot air slasher; construction of slasher; creel; cylinders; immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing; construction of size kettle; size mixing and boiling; division of sizing ingredients; values of ingredients; size receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in; and putting warps in looms. Looms: construction of plain loom; principal movements in weaving; let-off and take up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms: construction and advantages. Drop box looms; chain building for box looms; changing boxes to have easy running loom; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arranging colors in boxes; raising and lowering boxes to give easy running loom. Ball and shoe pick motion. Construction and fixing of head motion. Dobby; single and double action; construction and fixing of dobbie; dobbies with extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half-motion; and jumper attachment for leno. Springs and spring-boxes. Negative and positive head motions. Pattern chain building. Jacquard, single and double lift; construction

and tie up. Weave-room calculations: speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering; tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Required of Juniors and Seniors in the Four Year Course and of first and second-year students in the Short Course. Mr. NELSON.

**303. Textile Designing.**—Lectures and practice in designing, fabric structure and cloth analysis. Designing: method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honey-comb weaves. Bedford cords and combinations with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piques. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Fabric structure: textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Cloth analysis. Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight

of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen; worsted; silk; linen, and cotton yarns. Determination of one system of yarn to that of another. Required of Juniors and Seniors in the Four Year Course, and of first and second-year students in the Short Course. Mr. NELSON.

### DYEING.\*

**306. Dyeing.**—Lectures. Fraps' *Principles of Dyeing*. The textile fibres are studied. Special attention is paid to the cotton fibre, although the other fibres are studied to an extent sufficient to familiarize the student with their uses and applications. The steps necessary in preparing the fibres for dyeing, bleaching and scouring, etc., are taken up and then the application of each class of dyes to the different fibres. Typical dyes of each class are taken and studied. The student then takes up color-matching, color-mixing and dye-testing. Special attention being paid to these last courses. Finally the different methods of printing, dyeing mixed goods and mercerization are studied. Two periods. For Juniors. Mr. HASKELL.

**307. Dyeing Laboratory.**—The experiments are intended to follow the lecture course, thus making the student familiar by actual trial tests with facts brought out in the lecture. These tests are made with small skeins of yarn. The student learns the different methods of dyeing which are applicable to cotton, those which are applicable to wool, etc. Comparative tests as to fastness of washing, to light, to dilute acids, alkalies, and to rubbing are made, and the samples showing each test are kept in a scrap-book. The different styles of printing are studied and special methods for dyeing. Two periods. For Juniors. Mr. HASKELL.

### CHEMISTRY.\*

**311. Inorganic Chemistry.**—Remsen's *College Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Mr. PAGE.

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\* For further information, see courses in Industrial Chemistry.

**312. Inorganic Chemistry.**—Laboratory work. Remsen and Randall's *Laboratory Guide*. The student performs, under the eye of the instructor, experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. GARDNER.

**313. Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and their more important compounds are studied. Special attention is devoted to that part of the subject which bears more directly upon the dye-stuffs. Two periods. For Juniors. Mr. HASKELL.

### MECHANICAL ENGINEERING.\*

**316. Free-hand Drawing.**—Work in the use of the pencil; isometric sketches; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. GLENN.

**317. Elementary Mechanical Drawing.**—Use of instruments; geometric drawing; isometric drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Freshmen and first-year students. Mr. GLENN.

**318. Mechanical Drawing.**—Working sketches and drawing machine parts from the models; tracing and blue-printing; elementary machine design. Two periods. Required of Sophomores. Mr. CHITTENDEN.

**319. Wood-work.**—Use of bench tools; working from drawings, lining, sawing planing; practice in making simple exercises in wood-turning. One period. Required of Freshmen. Mr. BRAGG.

**320. Forge-work.**—Exercises in working with iron, welding; uses and care of forge-tools and fires. One period. Required of Freshmen. Mr. DEAL.

**321. Forge-work.**—Exercises in working with steel; tempering; case-hardening. One period, first term. Required of Sophomores and second-year students. Mr. DEAL.

**322. Pattern-making.**—Exercises in making patterns, generally of machine parts. One period, second and third terms. Required of Sophomores and second-year students. Mr. BRAGG.

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\* For full information, see course in Mechanical Engineering.

**323. Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; principles of correct methods of wood-working and forging; care of belting and shafting. One period. Required of Freshmen. Mr. BRAGG.

**324. Mechanical Processes.**—Description of machines used in engineering work; methods of pattern-making; moulding, casting and heavy forging; description of various machine tools and methods of performing work on them; boiler-making and plate-work. One period. Required of second-year students. Mr. CHITTENDEN.

**325. Steam-engine.**—Descriptive study of the simple steam-engine; names and uses of the various parts of an engine; various types of engines and fittings, foundations, and pipings; different types of boilers and setting; arrangement of power plants; care of engines and boilers. Two periods. Required of Seniors. Professor DICK.

### PHYSICS.\*

**331. Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Professor WEIHE.

**332. Elementary Lessons in Electricity and Magnetism.**—Two periods. Required of Sophomores. Professor WEIHE.

### MATHEMATICS.†

**336. Advanced Algebra.**—Begins at quadratic equations; general theory of equations; solution of higher equations, etc. Wells's *Higher Algebra*. Four periods, first and second terms. Required of Freshmen. Mr. YATES and Mr. MACCALL.

**337. Geometry.**—Plane and solid. Wentworth's *Plane and Solid Geometry*. Four periods, third term. Required of Freshmen. Four periods, first term. Required of Sophomores. Mr. YATES.

**338. Trigonometry.**—Four hours, second and third terms. Required of Sophomores. Mr. YATES.

**339. Book-keeping.**—The work of the text-books supplemented by numerous original examples and sets for practice. One period. Required of Freshmen. Mr. MANN and Mr. MACCALL.

\* For full information, see course in Electrical Engineering.

† For full information, see course in Civil Engineering.



## ENGLISH.

**341. Introductory Composition and Rhetoric.**—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**342. Rhetoric, Criticisms, Essays.**—The student is taught the essentials of good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Two periods, second term. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**343. Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

**344. American Literature.**—By means of an introductory text and by much reading students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Two periods, third term. Professor HILL, Mr. WILLIAMS and Doctor SUMMEY.

**345. English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

## HISTORY.

**346. Ancient and Modern History.**—The student, by means of text-book and informal lectures, is introduced to the leading facts in the world's history, and to the significance and consequences of these facts. While historic sequence is carefully noted, the student follows, as far as possible, the topical method. Two periods. Required of all Freshmen. Professor PHELPS.

**347. English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of all Juniors. Professor HILL.

**POLITICAL ECONOMY.**

**348. Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Two periods. Required of Seniors. President WINSTON.

**MILITARY SCIENCE.**

**349. Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours in the afternoon. Required of all classes. Commandant and officers of the Battalion.

**350. Tactics.**—Theoretical instruction in the Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Manual of Guard Duty; Outposts, etc. One period. Required of Juniors. Captain PHELPS.



## NORMAL COURSES.

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### I. For Rural Teachers:

- (a) Two Year Course.
- (b) One Year Course.
- (c) Summer Course.

### II. For City Teachers:

- (a) Two Year Course.
- (b) One Year Course.
- (c) Summer Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education is being introduced into our public schools, and the College has a constant demand for well trained industrial teachers. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short courses or the Summer Courses, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines but also in the other public school branches and in one or more sciences, or in higher Mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The expenses in the Normal Courses are the same as in the other courses of the colleges, except in the Summer Courses.

The Normal Courses are as follows:

**I. Courses for Rural Teachers.**

**(a) TWO YEAR COURSE.**

**First Year.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture -----	3	3	3
Nature Study { Plants -----	3	3	3
{ Animals -----	3	3	3
English -----	3	3	3
Mathematics -----	5	5	5
Agricultural Chemistry -----	2	2	2
Military Drill -----	3	3	3

**Second Year.**

Farm Equipment -----	4	--	--
Soils -----	--	4	--
Crops -----	--	--	4
Plant Diseases -----	3	--	--
Physics -----	--	3	--
Botany -----	--	--	3
Mathematics -----	4	4	4
English -----	3	3	3
Drawing -----	2	2	2
History -----	2	2	2
Military Drill -----	3	3	3

**(b) ONE YEAR COURSE.**

SUBJECTS.	PERIODS PER WEEK.		
	1st Term	2d Term.	3d Term.
Agriculture -----	3	3	3
Farm Equipment, Soils and Crops-----	4	4	4
Nature Study-----	3	3	3
Mathematics -----	4	4	4
English-----	3	3	3
Agricultural Chemistry-----	2	2	2
Military Drill-----	3	3	3

**(c) SUMMER COURSE.**

SEE ANNOUNCEMENT OF SUMMER SCHOOL BELOW.

**II. Courses for City Teachers.****(b) TWO YEAR COURSE.****First Year.**

Drawing-----	2	2	2
Wood-work-----	1	1	1
Forge-work-----	1	1	1
Mechanical Technology-----	1	1	1
Algebra and Geometry -----	4	4	4
English-----	3	3	3
History-----	2	2	2
Drill-----	3	3	3

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Book-keeping 1.

Second Year.

SUBJECTS.	PERIODS PER WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing-----	2	2	2
Wood-work-----	4	4	4
Forge-work -----	1	1	1
English-----	2	2	2
Architectural and Descriptive Geometry-----	2	2	2
Architectural Drawing-----	2	2	2
Geometry and Trigonometry -----	4	4	4
Drill-----	3	3	3

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology, Physiological Botany 3.

(b) ONE YEAR COURSE.

Drawing-----	3	4	4
Wood-work-----	4	5	5
Forge-work -----	2	2	2
Architecture -----	2	--	--
Architectural Drawing-----	2	2	2
Algebra and Geometry -----	4	4	4
Drill-----	3	3	3

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Book-keeping 1, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

(c) SUMMER COURSE.

SEE ANNOUNCEMENT OF SUMMER SCHOOL BELOW.

## SUMMER SCHOOL FOR TEACHERS.

---

GEORGE T. WINSTON, A. M., LL.D., President.

D. H. HILL, A. M., Vice-President.

CHARLES W. BURKETT, M. S., Ph. D., Dean of Industrial Departments.

EDWARD P. MOSES, A. M., Dean of Normal and Literary Departments.

WADE R. BROWN, Dean of Music Department.

CHARLES J. PARKER, Secretary.

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The first session of the Summer School for Teachers was held in the College buildings, July 1 to July 31, 1903. The total attendance was 338, representing nine States, and fifty-seven counties in North Carolina. The teachers in attendance came from one hundred and sixty-seven rural schools, sixty-six city graded schools, and thirty-nine academic and high schools.

The second session of the Summer School for Teachers will begin July 4th and close July 29, 1904, and will be followed immediately by the State Farmers' Convention, August 2d to August 5th.

### DEPARTMENTS OF INSTRUCTION.

#### I. Industrial.

- a* Agriculture, Nature Study, School Gardening.
- b* Paper and Card-board, Sloyd, Carpentry.
- c* Mechanical Drawing.
- d* Art Drawing (Chalk, Charcoal, Pencil, and Water-color).
- e* Raphia, Pyrography, Modeling, Color and Brush Work.
- f* Kindergarten, Elementary Grade Work.

#### II. Literary.

- a* English (Composition, Language, and Literature).
- b* History (Lectures and Investigations).
- c* Mathematics (Arithmetic and Algebra).

- d* French and German (Elementary, Advanced, and Conversational).
- e* Spanish and Italian (Elementary).
- f* Latin (Elementary, Advanced, Teachers' Course).

### III. Normal.

- a* Review of Public School Studies and Methods.
- b* Model School (Methods of Instruction).
- c* Superintendence, School Law, Public School System.
- d* Kindergarten: 1. With Pupils; 2. With Teachers and Mothers.

### IV. Music.

Public School Music (Vocal, Piano, Stringed Instruments).

### V. Commercial.

Stenography, Typewriting, Book-keeping, Penmanship.

### VI. Elocution and Physical Culture.

### VII. Concerts and Lectures.

**Expenses.**—Board and room in College dormitories—separate buildings for men and women—\$10 per month. Those wishing board outside can secure it at \$12 per month up. Tuition, \$5. Registration, \$1.

For detailed statement of Summer School work, faculty, etc., address

President GEORGE T. WINSTON,  
West Raleigh, N. C.

## DONATIONS.

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The College makes thankful acknowledgment of the receipt of the following gifts during the year:

### To the Department of Chemistry.

*Armour & Co. (Pepsin Department), Chicago.*—Several samples of suprarenalin and other laboratory products.

*Pittsburg Reduction Company, Pittsburg.*—Several samples of aluminum products.

### To the Textile Department.

*Draper Company, Hopedale, Mass.*—One Northrop-Draper loom with 20-harness dobby, complete; loom beams and filling bobbins for above; one ball winding attachment for section warper; repair parts for twister.

*Whitin Machine Works, Whitinsville, Mass.*—One 12-harness dobby; repairs for carding and spinning machinery.

*Mason Machine Works, Taunton, Mass.*—Box chain and pattern chain for looms; one spring jack and set of lens attachments for dobby loom.

*Kilburn & Lincoln, Fall River, Mass.*—One high-speed sheeting loom.

*Saco & Pettie Machine Shops, Newton Upper Falls, Mass.*—Repairs for spinning and roving frames.

*T. C. Entwistle Company, Lowell, Mass.*—One long chain beamer, complete.

*Jones & Laughlins (Ltd.), Pittsburg, Pa.*—Additional shafting, pulleys, hangers, couplings and clutch.

*General Electric Company, Schenectady, N. Y.*—Part value on one 30-horse-power and one 15-horse-power induction motor.

*Charlotte Supply Company, Charlotte, N. C.*—Part value on roving cans, cars and boxes.

*Universal Winding Company, Boston, Mass.*—Samples Universal yarns on cones, tubes and spools.

*A. H. Steele & Bro., Worcester, Mass.*—One 5-shuttle batten for suspender loom.



*Faulkner, Pagle & Co., New York.*—One case sample cloths.

*Stoddard, Haserick, Richards & Co., Boston, Mass.*—Two spools ramie doup twine.

*R. G. Campbell, Greensboro, N. C.*—One pair iron lugs.

*Christian Becker, New York.*—Part value on one set fine grain scales and weights.

*Cassella Color Company, New York.*—Samples dye-stuffs.

*Farbenfabriken von Elberfeld Company, New York.*—Samples dye-stuffs.

### Courtesies Extended.

Textile Excelsior, Charlotte, N. C.

Textile Manufacturers' Journal, New York.

Fiber and Fabric, Boston, Mass.

Manufacturers' Record, Baltimore, Md.

Textile World, Boston, Mass.

Dyers' Bulletin, Philadelphia, Pa.

The Dyer and Calico Printer, London, Eng.

The Chemical Trade Review and Dyers' Trade Journal, Phila., Pa.

Garment Dyers' Guide, Philadelphia, Pa.

Cassella Color Company, New York City.

Pilot Cotton Mills, Raleigh, N. C.

Caraleigh Cotton Mills, Raleigh, N. C.

### To the Library.

*Harper & Bros., New York.*—"Rise and Progress of Standard Oil Company," by Gilbert Holland Montague.

*Mr. James H. Hyde, New York.*—"A Biographical Sketch," by Henry Baldwin Hyde.

*J. H. Williams, Rialto, N. C.*—"Last Days of Pompeii," by Bulwer; "Hawaii," by A. D. Hall; "Porto Rico," by A. D. Hall; "Rob Roy," by Sir Walter Scott; "Waverley," by Sir Walter Scott; "Life of General U. S. Grant," by W. H. Van Orden; "Life of General Phil. H. Sheridan," by W. H. Van Orden; "The Real Kruger and the Transvaal"; "Legend of Montrose."

*Mrs. George T. Winston, Raleigh, N. C.*—"Simple Adventures of a Memsahib," by Sara Jeanette Duncan; "Wanted: A Match Maker," by Paul Leicester Ford; "Faust," by Goethe; "Ray's Daughter," by Captain Charles King; "Soldiers Three," by Rudyard Kipling; "The Pit," by Frank Norris; "Lives of Distinguished North Carolinians," compiled by W. J. Peele; "Home Building and Furnishing," by

Price & Johnson; "How They Kept the Faith," by Grace Raymond; "The True and the Beautiful," by John Ruskin; "Beautifying Suburban Home Grounds," by Frank J. Scott; "Domesticated Animals," by Nathaniel S. Shaler; "A Sentimental Journey," by Laurence Sterne; "'Historie de Charles XII,'" by Voltaire; "The Simple Life," by Charles Wagner; "Lady Rose's Daughter," by Mrs. Humphrey Ward; "Gentleman of France," by Stanley J. Weyman.

*Professor W. A. Withers, Raleigh, N. C.*—"Twixt Cupid and Cræsus," by Charles P. Didier; "The Inside of Mormonism," United States District Court.

### To the Registrar's Office.

*Imperial Manufacturing Company, Newark, N. J.*—One set of typewriter cushion keys.

# CATALOGUE OF STUDENTS.

## GRADUATES.

<i>Name.</i>	<i>Post-office.</i>	<i>Major Course.</i>
JUNIUS SIDNEY CATES, B.Agr.,	Raleigh,	Agriculture.
EUGENE ENGLISH CULBRETH, B.E.,	Statesville,	<u>Elec. Eng.</u>
WALTER LEE DARDEN, B.E.,	Goldsboro,	C. E. & Agr.
OLIVER MAX GARDNER, B.S.,	Shelby,	Chemistry.
JOHN HOWARD GLENN, B.E.,	Crowder's Creek,	Civil Eng.
CARROLL LAMB MANN, B.E.,	Englehard,	Civil Eng.
ROGER FRANCIS RICHARDSON, B.E.,	Selma,	C. E.
CLEVELAND DOUGLASS WELCH, B.E.,	Waynesville,	<u>E. E. &amp; Agr.</u>

## SENIOR CLASS.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
NELSON ADAMS,	McColl, S. C.	M. E.
HAYWOOD LEWIS ALDERMAN,	Greensboro,	E. E.
SYDNEY WOODWARD ASBURY,	Burkmont,	M. E.
EUGENE CLEVELAND BAGWELL,	Raleigh,	C. E.
EDWARD PAR BAILEY, JR.,	Wilmington,	M. E.
JAMES CLADIUS BARBER,	Barber,	M. E.
WILLIAM WALTER BARBER,	Barber,	M. E.
WILLIAM ALEXANDER BARRETT,	White Store,	E. E.
TIMOTHY ELDRIDGE,	Glenwood,	E. E.
JAMES WILLIAM FARRIOR,	Kenansville,	E. E.
WILLIAM WALTER FINLEY,	North Wilkesboro,	Agr.
GEORGE WASHINGTON FOUSHEE,	Greensboro,	Tex.
EDGAR WILLIAM GAITHER,	Wilmington,	Chem. (D.)
PAUL STIREWALT GRIERSON,	Moorestville,	M. E.
JOSEPH PERRIN GULLY, JR.,	Raleigh,	E. E.
JARVIS BENJAMIN HARDING,	Greenville,	Tex.
GEORGE HERBERT HODGES,	Kinston,	M. E.
JESSE MCRAE HOWARD,	Wadesboro,	Tex.
BRANTON FAISON HUGGINS,	Goldsboro,	M. E.
HILL MCIVER HUNTER,	Durham,	Tex.
WILLIAM KERR,	Bryson City,	Agr.
ERNEST EDWIN LINCOLN,	Kinston,	C. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
JOHN FAIRLY MCINTYRE,	Laurinburg,	M. E.
JAMES MCKIMMON,	Raleigh,	Tex.
JOSEPH ALFRED MILLER, JR.,	Brevard,	E. E.
WILLIAM FIELD MORSON,	Raleigh,	C. E.
LEON ANDREW NEAL,	Marion,	C. E.
WILLIAM JOEL PATTON,	Brevard,	E. E.
FREDERICK COLWELL PHELPS,	West Raleigh,	E. E.
WILLIAM WALTER RANKIN,	Charlotte,	M. E.
RISDEN PATTERSON REECE,	Mount Airy,	M. E.
WILLIAM RICHARDSON, JR.,	Selma,	M. E.
JAMES CLARENCE TEMPLE,	Sanford,	Agr.
JOSEPH KENDALL WAITT,	Raleigh,	C. E.
MARION EMERSON WEEKS,	Scotland Neck,	M. E.
ALBERT CLINTON WHARTON, JR.,	Clemmons ville,	Agr.

### JUNIOR CLASS.

ROBERT JAMES AVERY,	Morganton,	Agr.
OSCAR LUTHER BAGLEY,	Bagley,	Chem.
BENJAMIN ALEXANDER BROOM,	Olive Branch,	M. E.
JOEL WATKINS BULLOCK,	Williamsboro,	Agr.
HENRY BROZIER CARTWRIGHT,	Elizabeth City,	C. E.
WILLIAM MILLER CHAMBERS,	Wentworth,	E. E.
HILLIARD FRANCIS CREITZBERG, JR.,	Gastonia,	Chem.
LATTA VANDERIAN EDWARDS,	Merry Oaks,	C. E.
WALTER GOSS FINCH,	Lexington,	M. E.
STERLING GRAYDON,	Greenwood, S. C.,	M. E.
FRED. WATSON HADLEY,	Siler City,	Chem.
RICHARD HUGH HARPER,	Patterson,	Chem.
ODIS HILDREATH HENDERSON,	Hampstead,	M. E.
LABAN MILES HOFFMAN, JR.,	Dallas,	Tex.
JULIAN MEREDITH HOWARD,	Tarboro,	C. E.
EUGENE BOND HOWLE,	Raleigh,	Tex.
ARTHUR TEMPLETON KENYON,	Clinton,	C. E.
STARR NEELY KNOX,	Pineville,	C. E.
JAMES HERRITAGE KOONCE,	Richlands,	C. E.
ROBERT CHARLES LEHMAN,	Raleigh,	C. E.
HENRY MARVIN LILLY,	Rest,	C. E.
SEBOR SMEDES LOCKHART,	Wadesboro,	E. E.
LIPSCOMBE GOODWIN LYKES,	Tampa, Fla.,	Mining.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
GEORGE GREEN LYNCH, JR.,	Wilmington,	E. E.
WALTER HOGE MCINTIRE,	Wilmington,	Chem.
CHARLES WIGG MARTIN,	Portsmouth, Va.,	Agr.
JAMES OSCAR MORGAN,	Etowah,	Agr.
LINDSAY ALEXANDER MURR,	Wadesboro,	C. E.
GARLAND PERRIN MYATT,	Raleigh,	Chem.
JOHN ALSEY PARK,	Raleigh,	M. E.
LINUS MARCELLUS PARKER,	Raleigh,	Chem.
JAMES HICKS PEIRCE,	Warsaw,	Chem.
P. H. POINDEXTER, JR.,	Donoha,	Agr.
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JOHN FORNEY REINHARDT, JR.,	Reinhardt,	Agr.
ROBERT WALTER SCOTT, JR.,	Melville,	Agr.
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WALTER WELLINGTON WATT,	Charlotte,	Tex.
ARCHIE CARRAWAY WILKINSON,	Charlotte,	C. E.
JOHN ENOCH WILLIAMS,	Kinston,	E. E.

### SOPHOMORE CLASS.

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RISDEN TAYLOR ALLEN,	Wadesboro,	E. E.
RAYMOND VANCE ALLISON,	Statesville,	M. E.
GEORGE PAGE ASBURY,	Burkmont,	C. E.
JOHN GRANGE ASHE,	Raleigh,	Tex.
JOHN GILBERT BALDWIN,	Maxton,	E. E.
JAMES CLAUDIUS BEAVERS,	Morrisville,	Agr.
HARWOOD BEEBE,	Baltimore, Md.,	C. E.
NEEDHAM ERIC BELL,	Kinston,	Chem.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
KENNETH LEON BLACK,	Mount Mourne,	C. E.
STERLING GEE BODDIE,	Laurel,	Tex.
WILLIAM FRANCIS BROCK,	Farmington,	C. E.
WILLIAM ANDREWS BUYS,	Havelock,	C. E.
MARK HOPKINS CHESBRO,	Claremont, Va.,	Agr.
CONNOR CALHOUN CLARDY,	Concord,	E. E.
DAVID MACKENZIE CLARK,	Weldon,	C. E.
EDWIN CLARK, JR.,	Weldon,	E. E.
JOHN WASHINGTON CLARK,	Raleigh,	M. E.
JAMES DUNCAN CLARKE, JR.,	Tampa, Fla.,	Chem.
SAMUEL HERBERT CLARKE,	Statesville,	C. E.
WILEY THEODORE CLAY,	Hickory,	M. E.
ARTHUR GAEDNER COFFIN,	Greensboro,	E. E.
DUNCAN ARCHIBALD COX,	Rowland,	E. E.
ALEXANDER DOANE CROMARTIE,	Garland,	Agr.
WILLIAM OSBORNE CRUMP,	Polkton,	E. E.
WILLIAM MAURICE DAUGHTBRIDGE,	Rocky Mount,	Agr.
BENJAMIN BALLARD EGERTON,	Ingleside,	C. E.
WILLIAM CARLYLE ETHERIDGE,	Manteo,	Agr.
JAMES BECKETT EWART,	Hendersonville,	E. E.
SAMUEL MOBGAN FISHER,	Lake Landing,	C. E.
SHIRLY WATSON FOSTER,	Nance,	Agr.
CHARLES WILIE FRANKLIN,	Mt. Airy,	Agr.
WILLIAM ALVA GREENLEAF,	Elizabeth City,	M. E.
ARTHUR WYNN GREGORY,	Halifax,	Tex.
CHARLES WALTER HACKETT,	North Wilkesboro,	C. E.
GEORGE PARISH HAMILTON,	Charlotte,	M. E.
HOBACE LESTER HAMILTON,	Biltmore,	E. E.
JOHN FREDERICK HANSELMAN,	Manson,	M. E.
CLARENCE CARL HARRELL,	Hamilton,	Agr.
CLARENCE WILSON HEWLETT,	Wilson,	E. E.
JAMES ALLAN HIGGS, JR.,	Raleigh,	C. E.
CYRUS WALKER HODGES,	LaGrange,	M. E.
WILLIAM CLAUDE HUBAND,	Winston,	M. E.
CLAUDE BEVERLY HUGGINS,	Goldsboro,	M. E.
LESTER LAFAYETTE JORDAN,	Raleigh,	C. E.
WILLIAM GRAHAM KNOX,	Charlotte,	E. E.
EUGENE TALMAGE LEE,	Dunn,	E. E.
MARTIN PEARL LIPE,	Mint Hill,	Agr.
LOUIS EDGAR LOUGEE,	Raleigh,	M. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
JOE POINDEXTER LOVILL,	Pine Ridge,	C. E.
THOMPSON MAYO LYKES,	Tampa, Fla.,	C. E.
JOHN CHESLEY McCASKILL,	Maxton,	E. E.
MALCOM ROLLAND MCGIRT,	Rowlands,	Agr.
HORACE SMITH McLENDON,	Ansonville,	Agr.
ALBERT POWERS McMILLAN,	Fayetteville,	Tex.
RAYMOND MAXWELL,	Resaca,	C. E.
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WALTER BOOKER MOORMAN,	Asheville,	E. E.
JOSEPH GRAHAM MORRISON,	Mariposa,	Agr.
JESSE CLARENCE MYRICK,	Littleton,	E. E.
BEN ALLEN NEWLAND,	Lenoir,	E. E.
CHARLES GATTIS NICHOLS, JR.,	Roxboro,	M. E.
CHARLES FRANKLIN NIVEN,	Morven,	Agr.
LOLA ALEXANDER NIVEN,	Cairo,	Agr.
JAMES CHURCHWELL O'BERRY,	Dudley,	Agr.
LEWIS MILTON ODEN,	Hunter's Bridge,	Agr.
THOMAS JEFFERSON OGBURN,	Greensboro,	M. E.
CLYDE ESTER PARKER,	Raleigh,	Chem.
ARTHUR LEE PASCHAL,	Vaughan,	Agr.
CARL RANDALL PEPPER,	Southport,	C. E.
SAMUEL OSCAR PERKINS,	Muttenz,	Chem.
ANGELO BETTLENA PIVER,	Wilson,	C. E.
WILLIAM CRAWFORD PIVER,	Wilson,	E. E.
HENRY FRIES PRIMROSE,	Raleigh,	M. E.
DURANT WAITE ROBERTSON,	Washington, D. C.,	Tex.
CLYDE VERNON ROSS,	Bonnerton,	M. E.
WARD SHANNANHOUSE,	Charlotte,	Chem.
COLMAN MORELL SMITH,	Crystal Hill, Va.,	M. E.
ALFRED DUNCAN SMITHWICK,	Sans Souci,	C. E.
ERVIN BLAKENEY STACK,	Monroe,	E. E.
FREDDIE JACKSON TALTON,	Pikeville,	Agr.
BAYARD TAYLOR,	Beaufort,	E. E.
LUTHER RUSSELL TILLET,	Carolla,	C. E.
RICHARD HENRY TILLMAN,	Deep Creek,	E. E.
WILLIAM SIDNEY TOMLINSON,	Goldsboro,	C. E.
REID TULL,	Kinston,	C. E.
HUGH MARSHALL TURNER,	Norwood,	Tex.
JACKSON CORPENING TUTTLE,	Lenoir,	E. E.



<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
ROBERT PEEL UZZELL,	Goldsboro,	Agr.
PETER VALAER, JR.,	Winston,	Chem.
LILLIAN LEE VAUGHAN,	Franklin, Va.,	M. E.
CHARLES MANLY WALTON,	Morganton,	C. E.
RALPH OURAY WALTON,	Morganton,	M. E.
ALEXANDER WHITE,	Floral College,	Agr.
JOHN HARLEIGH WILLIAMS,	Rialto,	Tex.
LEWIS TAYLOR WINSTON,	West Raleigh,	Agr.

### FRESHMAN CLASS.

THOMAS WILLIAMS ADICKES,	Raleigh,	C. E.
ROBERT FRANKLIN ARMFIELD,	Statesville,	E. E.
CLARENCE RICHARD AYCOCK,	Whiteville,	Tex.
ERNEST HOWARD BARNES,	Bizzell,	M. E.
HERBERT SCANDLIN BATTIE,	Greensboro,	C. E.
JOE PITTMAN BIVENS,	Goodman,	C. E.
ALEXANDER LILLINGTON BLOW, JR.,	Greenville,	C. E.
JOHN YOUNG BONNER,	Aurora,	M. E.
JOHN BINGHAM BOOTH,	Oxford,	E. E.
WILLIAM GILES BROADFOOT,	Fayetteville,	Tex.
JAMES PITTMAN BROOKS,	Grifton,	Agr.
RICHARD BURACKER,	Shenandoah, Va.,	E. E.
LINDSAY FERGUSON CARLETON,	Boomer,	E. E.
ROBERT HILL CARTER,	Blackstone,	E. E.
KINCHEN CLYDE COUNCIL,	Wananish,	M. E.
CLAUD COUNCIL DAWSON,	Grifton,	Tex.
JACK CARRIER DENISON,	West Asheville.	E. E.
CARL NICHOLS DUNN,	Raleigh,	C. E.
JACOB TATUM EATON,	Farmington,	Agr.
JOHN LINDSAY FERGUSON,	Kendal,	M. E.
WILLIAM HENRY FETTER,	Winston-Salem,	M. E.
FRANK THEODORE FOY,	Winston-Salem,	E. E.
HENRY ALMOND FOY,	Kinston,	M. E.
THOMAS MAXWELL FREEMAN,	Goldsboro,	M. E.
CLEMENT LEINSTER GARNER,	Beaufort,	C. E.
FRANK DUNCAN GIBSON,	Gibson,	Agr.
JEPHTHA NELSON GIBSON,	Gibson,	Agr.
ROY JOSEPH GILL,	Raleigh,	C. E.
JOSEPH BASSETT GOOCH,	Weldon,	M. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
ROBERT STRICKLER GRAVES,	Syria, Va.,	E. E.
JOHN CLARENCE GRIMES,	Lexington,	M. E.
RICHARD FREDERICK HAMME, JR.,	Wilmington,	E. E.
JOHN DAVIS HAMNER,	High Point,	E. E.
GEORGE ROM HARDESTY,	Wakefield,	M. E.
JOHN GABRIEL HARDISON,	Thurman,	Agr.
GORDON HARRIS,	Raleigh,	E. E.
JOKTAN LAFAYETTE HEMPHILL,	Morganton,	E. E.
GUY FRANCIS HINSHAW,	Winston-Salem,	C. E.
ARTHUR NAPOLEON HOLSHOUSER,	Spencer,	E. E.
WILLIAM NORMAN HOLT,	Smithfield,	M. E.
GEORGE LEON HOOKS,	Fremont,	Agr.
GLENN VICTOR HOOVER,	Winston-Salem,	E. E.
JOHN PENN HUNT,	Winston,	M. E.
JAMES IREDELL JOHNSON, JR.,	Raleigh,	C. E.
THOMAS WILMOT JOHNSON,	Raleigh,	M. E.
ERIC FRANKLIN JOHNSTON,	Raleigh,	M. E.
HAROLD CHAPMAN JOHNSTON,	Raleigh,	C. E.
ALBERT CARL JONES,	Wheatmore,	Agr.
LAWRENCE O'TOOLE JONES,	Raleigh,	M. E.
RUFUS HENRY JONES, JR.,	Asheville,	Tex.
WILLIAM WHITMORE JONES,	Franklin,	E. E.
PHILIP DALTON KENNEDY,	Daltonia,	Tex.
CLARK HARRISON KIRKMAN,	Pleasant Garden,	Agr.
CULLEN LEGGETT KORNER,	Kernersville,	E. E.
CHARLES EDWARD LATTA,	Raleigh,	Tex.
LUTHER VERNON LEWIS,	Beaufort,	E. E.
CLEMENT LACY LOWRANCE,	Mooreville,	E. E.
JAMES BURTON LYLE,	Franklin,	E. E.
JAMES BORDEN LYNCH,	Wilmington,	C. E.
JOSEPH ALDEN LYON,	Elizabethtown,	Agr.
JOE CLEVELAND MCCANLESS,	Salisbury,	C. E.
BELTON FLETCHER MCCOLMAN,	Gibson,	Agr.
OSCAR FRANKLIN MCNAIRY,	Greensboro,	M. E.
LEWIS CARLTON MATTHEWS,	Bradley's Store,	E. E.
VALENTINE MAUNEY,	Salisbury,	Mining.
EUGENE FRANKLIN MEADOR,	Reidsville,	M. E.
BENNETT TAYLOR MIAL,	Raleigh,	Tex.
OSCAR DURHAM MIDDLETON,	Warsaw,	E. E.
FRANK THOMAS MILLER,	Rural Hall,	E. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
ROY HERBERT MITCHELL,	Rolesville,	C. E.
HENRY STARBUCK MONTAGUE,	Winston-Salem,	Chem.
CHARLES MILTON MOORE,	Gastonia,	Tex.
BOGER HENDRIX MOTT,	Statesville,	M. E.
VICTOR MOTZ,	Lincolnton,	Tex.
EDWIN SCOTT MYATT,	Raleigh,	M. E.
JONATHAN WHITEHEAD OLD, JR.,	Portsmouth,	E. E.
ROBERT DOUGLAS OLDS,	Raleigh,	M. E.
JAMES NUNN OLIVER,	Mt. Olive,	C. E.
NORWOOD ORRELL,	Wilmington,	M. E.
CHARLES CULLEN OSBORNE,	Lawndale,	M. E.
JAMES ELWOOD OVERTON,	Ahoskie,	Agr.
CLARENCE ESTIS PAGE,	Morrisville,	Tex.
THOMAS FRANK PARKER,	Hillsboro,	Agr.
FRED. MAYNARD PARKS,	Morganton,	M. E.
HILL CRAWFORD PARSONS,	Rockingham,	M. E.
EDWARD NEWTON PEGRAM,	Gastonia,	C. E.
GUY PINNER,	Elm City,	E. E.
WINSLOW GERALD PITMAN,	Lumberton,	M. E.
JAMES KEMP PLUMMER,	Middleburg,	M. E.
ERNEST LEONARD RIDDICK,	Gatesville,	Tex.
RUFUS MORRISON RIDDICK, JR.,	Gatesville,	Tex.
WILLIAM MOORE RIDDICK, JR.,	Hertford,	C. E.
ZEB. VANCE RIERSON,	Winston-Salem,	M. E.
THOMAS WILSON SADLER,	Sandifer,	M. E.
LEON JACOB SCHWAR,	Goldsboro,	C. E.
JOHN OSCAR SHUFORD,	Gastonia,	E. E.
JOHN ERNEST SIGMON,	Newton,	E. E.
HENRY SPRAGUE SILVER,	Morganton,	E. E.
JAMES LAWRENCE SMITH, JR.,	Linden,	M. E.
LEON MARTIN SMITH,	Goldsboro,	C. E.
RALPH HUNTER SMITH,	New Bern,	M. E.
JESSE PAGE SPOON,	Oakdale,	Agr.
CLIFTON EARLE STANCIL,	Hills,	E. E.
WILLIAM CRAWFORD STAPLES,	Reidsville,	E. E.
CARL THOMAS STRUPE,	Winston-Salem,	Agr.
VANCE SYKES,	Rock Spring,	C. E.
LOFTIN AGRIPPA TART,	Newton Grove,	M. E.
CLAUDE STRATTON TATE,	Littleton,	M. E.
JOHN WILLIAM THORNTON,	Dunn,	C. E.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
WILLIAM BROOKS TRUITT,	Greensboro,	M. E.
JOHN ED. TURLINGTON,	Clinton,	Agr.
HORACE HENRY VANCE,	Winston-Salem,	M. E.
ERNEST MONROE WATKINS,	Anderson, S. C.,	M. E.
GEORGE MURRAY WATSON,	Wysocking,	C. E.
LINDSAY MARADE WEAVER,	Lexington,	M. E.
CHARLIE LOUIS WEILL,	Rockingham,	E. E.
WILLIAM HALL WETMORE, JR.,	Greensboro,	C. E.
DAVID LYNDON WHITE,	Trinity,	Agr.
GEORGE LUMSDEN WHITE,	Raleigh,	E. E.
SIDNEY RUSSELL WHITE,	Scotland Neck,	C. E.
CECIL BERNARD WHITEHURST,	Beaufort,	E. E.
WILLIAM HENRY WHITLEY,	Albemarle,	Tex.
NORMAN LEE WILLIS,	Beaufort,	E. E.
EDGAR ADOLPH WOHLFORD,	Winston-Salem,	M. E.
HERBERT WILLIAM WOHLFORD,	Winston-Salem,	E. E.

### SHORT COURSE STUDENTS.

#### Second Year.

ZERA THAXTON BENSON,	Lake Comfort,	M. A.
GEORGE CARLTON COLE,	Carbonton,	M. A.
MARTIN HENRY COLLINS,	Holly Springs,	M. A.
CHARLES BERNARD DOVE,	Franklinville,	M. A.
CICERO HORACE DURHAM,	Saxapahaw,	Tex.
RUFUS EUGENE FORBIS,	Greensboro,	M. A.
WALTER MAURICE HAIGLER,	Hayesville,	Tex.
COOPER ANDREWS HALL,	Woodsdale,	Tex.
GROVER CLEVELAND HARDESTY,	Morehead City,	Agr.
WALTER EVANDER KELLY,	Carthage,	Agr.
JOB HANSELL KOON,	Asheville,	M. A.
WILLIAM EDWARD McLAUCHLIN,	Cheraw, S. C.,	M. A.
WILLARD BOWDEN MIDDLETON,	Warsaw,	M. A.
FRANK FAISON MILLER,	Pearsall,	M. A.
JAMES THOMAS MORGAN,	Corapeake,	Con. & Bldg.
HUBERT BERRY NICHOLSON,	Richlands,	Agr.
FLEETWOOD BROWN RANKIN,	Brown's Summit,	Tex.
WALLACE SELLARS,	Southport,	M. A.
HUGH FRANK TURLINGTON,	Clinton,	Agr.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
JOHN WESCOTT,	Manteo,	M. A.
ERNEST EUGENE WHITE,	Albright.	M. A.
GROVER STOCKTON WILLIAMS,	Boonville,	Agr.
RALPH ONEIDA WILSON,	Delway,	Agr.

### First Year.

JESSE MARVIN ALDRIDGE,	Institute,	M. A.
WEBSTER SPRUILL ALEXANDER,	Columbia,	M. A.
JOHN DANIEL ANDREWS,	Roxboro,	M. A.
CARL FLETCHER BAGLEY,	Bagley,	Agr.
FRANK OSCAR BALDWIN,	Portsmouth, Va.,	M. A.
DANIEL WILLIAM BARNHILL,	Oxford,	Agr.
EUGENE THOMAS BEDDINGFIELD,	Raleigh,	Agr.
JOHNIE MADISON BERRY,	Lake Comfort,	Agr.
ROBERT CRAVEN BRIDGER,	Bladenboro,	M. A.
JOHN MONROE BRITT,	Merry Hill,	Agr.
JESSE WORTH BURNS,	Gaddysville,	Agr.
WILLIAM PAUL CARROLL,	Shelby,	M. A.
ROBERT CHARLIE CHAMBLEE,	Wakefield,	Agr.
SIMON COKER,	Garysburg,	M. A.
KERR MILLER CLEMENT,	Farmington,	Agr.
SAMUEL FESTUS COLE,	Alderman,	Agr.
LOUIS HILL COUCH,	Southern Pines,	M. A.
JAMES WILLIAM CRAWFORD,	Marion,	M. A.
JAMES CROSLAND,	Diggs,	Agr.
WILLIAM HENRY CROW,	Raleigh,	M. A.
GEORGE EUGENE CROWELL,	Candler,	Agr.
CLYDE WATERSON DEAL,	Raleigh,	Agr.
BLAINE CLINGMAN DELLINGER,	Shelby,	M. A.
LOUIS C. DRAKE,	McAdensville,	M. A.
PAUL HERSCHEL FERGUSON,	Whittier,	Agr.
WARREN GROSS FERGUSON,	Southern Pines,	M. A.
URBAN BANIOUS FISHER,	Lake Comfort,	Agr.
ALAN FRASER,	London, Eng.,	M. A.
WILLIAM WALTER GAINNEY,	Hope Mills,	Agr.
SETH MANN GIBBS,	Middleton,	Tex.
CHARLES PATTERSON GORMAN,	Cronly,	Agr.
WILLIAM THOMAS GRIMES,	Lexington,	M. A.
SAMUEL SPENCE HAITHCOCK,	Greensboro,	M. A.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
MALGRIN FLAY HAMRICK,	Caroleen,	M. A.
WILLIAM PRESTON HARRELL, Jr.,	Sunbury,	Agr.
HENRY WILLIAM HARRINGTON,	Diggs,	M. A.
THOMAS HARRIS,	Raleigh,	M. A.
CLIFFORD HARRISON,	Franklin,	Agr.
RANDOLPH HARRISON,	Raleigh,	M. A.
TROY ISAIAH HERRING,	Herring,	M. A.
THEODORE THOMPSON HESTER,	Roxboro,	Agr.
JOHN MURCHISON HODGES,	Linden,	Tex.
MILTON WALKER HUNTER,	Oxford,	M. A.
ROY MARSHALL HUNTLEY,	Wadesboro,	M. A.
JAMES CLARK JACKSON,	Fayetteville,	M. A.
WILLIAM ESTON JENKINS,	Roxobel,	Agr.
HENRY KELLOGG,	Sunbury,	Agr.
JOHNSON OLIVE KELLY,	Apex,	Agr.
VERNON LILES KNOTTS,	Wadesboro,	M. A.
HUGH BURTON LANCE,	Hot Springs,	M. A.
JOSEPH JOSHUA LANE,	Dunn,	M. A.
ROY CARLTON LASSITER,	Snow Hill,	Tex.
WILLIAM HERBERT LAWRENCE,	Goff,	M. A.
ED. MILBURN LINVILLE,	Kernersville,	M. A.
WALTER HAVELAND LOWE,	Woodland,	M. A.
WILLIAM ONEAL MCKEOWN,	Cornwell, S. C.,	M. A.
RALPH EDGAR MCLAURIN,	McColl, S. C.,	Agr.
ALLEN PEMBERTON MCNEILL,	Hope Mills,	M. A.
WALTER LAFAYETTE MASON,	Stanley,	M. A.
MARSHALL PAULUS MASSIE,	Bryant, Va.,	M. A.
EDWARD H. MELLICHAMPE, JR.,	Weldon,	M. A.
RICHARD HENRY MOORE, JR.,	Battleboro,	M. A.
WILLIAM CARROLL MOORE,	Globe,	M. A.
HERBERT WRIGHT MORRISSETTE,	Shiloh,	M. A.
ARCHIE DEAN MOSELEY,	Kinston,	Agr.
DAVID ROBERT NELMS,	Washington,	Agr.
WAVERLY BOYD NEWSOME,	Aulander,	M. A.
JAMES CALEB PARKER,	Elm City,	M. A.
PAUL MICHAUX PEARSON,	Morganton,	Agr.
JOHN SHAW PESCUO,	Raleigh,	M. A.
LAWRENCE LYON PITTMAN,	Whitakers,	M. A.
WILLIAM LACY PRICE,	Ashpole,	Agr.
JOHN BRADFORD PRITCHETT,	Gudger,	M. A.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
THOMAS AUGUSTUS RAYNER,	Merry Hill,	M. A.
STEPHEN BLAINE ROBERTS,	Marshall,	Agr.
LEE CONSTANTINE SAVAGE,	Scotland Neck,	Agr.
JAMES CLIFTON SAWYER,	Elm City,	M. A.
MARTIN HENRY SCHULKEN,	Whiteville,	M. A.
RICHARD BELVA SEARS,	Como,	Agr.
HARVEY HILL SMITH,	Lemon Springs,	M. A.
JESSE MARVIN SMITH,	Farmington,	Agr.
JOHN WILLIAMS SMITH,	Merry Hill,	Agr.
MARSDEN SPENCER SMITH,	Wilmington,	M. A.
TENNYSON BARRETT SMITH,	Iron Station,	Agr.
CLEM NUMA SOMERS,	Elon College,	M. A.
NELSON THOMAS STACY,	Asheville,	M. A.
JESSE COLETRANE STANSEL,	Allenton,	Agr.
HERBERT NATHAN STEED,	Steeds,	Tex.
CHARLES EDWARD STEWART,	Claremont,	M. A.
HERSCHELL LINDLEY SWANN,	Cool Springs,	Agr.
GUY CLAUDIUS TAYLOR,	Hyc,	M. A.
WILLIAM NOLLIE TILLET,	Carolla,	M. A.
HUGH BRYON TUNSTALL,	Snow Hill,	Agr.
JAMES ARCHIE UNDERWOOD,	Newton Grove,	M. A.
PAUL VALAER,	Winston,	M. A.
GEORGE WILLIS WARREN,	Spring Hope,	Agr.
JOE GREEN WARWICK,	Laurinburg,	Agr.
THOMAS EMMETT WATSON,	Raleigh,	Agr.
ROSCOE ROBERTSON WEAVER,	Nonah,	M. A.
FRANK BLOUNT WEBB,	Hillsboro,	M. A.
LOYD ADOLPHUS WHITENER,	Hickory,	M. A.
HUGH ALLAN WILLIS,	McColl, S. C.,	M. A.
JOHN SAMUEL WILSON,	Oxford,	Agr.
ROBERT GRAVES WILSON,	Madison,	Agr.
ROBERT THOMAS WILSON,	Gatewood,	Tex.
THOMAS HENRY WILSON,	Begonia,	Agr.
JAMES MONROE WOODHOUSE,	Manteo,	M. A.

### Irregular Students.

LEROY FRANKLIN ABERNETHY,	Hickory,	Agr.
WILLIS WALTERS BAKER,	Wakefield,	C. E.
JAMES MAGLENN BASKERVILLE,	Charlotte,	E. E.



<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
ABRAM OLIVER BRAY,	Elkin,	E. E.
WILLIAM HENRY ASBURY BROWN,	Brevard,	M. A.
ALBERT BRETSCH,	Raleigh,	M. E.
THOMAS ROBERT BUCKLEY,	Washington, D. C.	Agr.
WELDON THOMAS DAVIS,	Arcola,	Agr.
JAMES STONEY DRAKE,	Mountain Island,	Tex.
BENJAMIN BRYAN EVERETT,	Palmyra,	Agr.
CLAUD VIVIAN GARNER,	Grissom,	M. E.
JAMES LYTCH GIBSON,	McColl, S. C.,	Agr.
CHARLES MARION HAMILTON,	Charlotte,	E. E.
JAMES HERBERT HELVIN,	Charlotte,	M. E.
LAWRENCE JAMES HERRING,	Clinton,	Agr.
JERE ISAAC HERRITAGE,	Catherine Lake,	C. E.
RICHARD ROWAN HOLT,	Smithfield,	Agr.
LLOYD RAINEY HUNT,	Lexington,	E. E.
WILLIAM FRANKLIN KIRKPATRICK,	Charlotte,	Agr.
LAFAYETTE FRANK KOONCE,	Richlands,	Agr.
JOSEPH YOUNG MCCLELLAND,	Jefferson, O.,	Agr.
SAMUEL SANKEY MAUNEY,	Shelby,	Agr.
HENRY HALL MURRAY,	Greensboro,	Mch. & Dwg.
VIRGIL LEE NEAL,	Madison,	Agr.
WILLIAM CRAWFORD PHILLIPS,	Roberdel,	Agr.
PRYOR WATSON PUREFOY,	Asheville,	Shop.
EUGENE THOMAS ROBESON,	Greensboro,	C. E.
LOUIS WEST,	Raleigh,	E. E.
RONALD BONAR WILSON,	Greensboro,	Tex.

### Special Students.

OCTAVIO AUGUSTO ACEVEDO,	Macoris, S. Domingo,	C. E.
JOHN BREWER BAGLEY,	Scotland Neck,	Tex.
SHERWOOD BATTLE BROCKWELL,	Raleigh,	Shop.
ENOCH PRATT FEARING,	Pasquotank,	Eng. & Math
ARDIE RANSOM HUNTER,	Harrisburg,	Drawing.
SHARPE IRELAND,	Winston,	Shop.
MISS EVELYN BYRD LAWRENCE,	Raleigh,	Arch.
WALTER GRAHAM MOORE,	Burgaw,	Drawing.
IRA BROADUS MULLIS,	Union,	Survey.
ESTON GEORGE RENNO,	Canton,	Drawing.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
GEORGE BEARD ROBERSON,	Guilford College,	Tex.
MISS IVEY ROBERTS,	Raleigh,	Drawing.
GEORGE A. SHUFORD,	Winston,	Shop.
ALFRED BURTON SLAGLE,	Crawford,	Drawing.
LOUIS MURDOCK SMITH,	Raleigh,	Agr.
JOHN WILBUR SNIPES,	Chapel Hill,	Agr.
FRED. ERNEST SPRINGS,	Charlotte,	Shop.
MISS FRANCES CLAIRE STAINBACK,	Raleigh,	Chem.
MANUEL MARIA VILOMAR,	Macoris, S. Domingo,	Agr.

### WINTER COURSE STUDENTS.

FRED. PURVIS ALBRIGHT,	Greensboro,	Dairying.
JAMES CULLEN BRYANT,	Caswell,	Dairying.
JOHN THOMAS CULBRETH,	Lowe,	Dairying.
HILSMON CLELLAN DAVIS,	Grissom,	Dairying.
HUGH ALEXANDER DOBBIN,	Valle Crucis,	Dairying.
WILLIAM RESSIE FOUST,	Wright,	Dairying.
HARVEY GALYEAN,	Asheville,	Dairying.
GEORGE BASCOMBE GLENN,	Avery's Creek,	Dairying.
WALTER HARRISON HARDIN,	Julian,	Dairying.
SILVESTER STARR HIGGINS,	Guilford College,	Dairying.
EVERETT CLARENCE HODGIN,	Greensboro,	Dairying.
AUGUSTUS PRITCHARD HOWARD,	Salemburg,	Dairying.
WALTER LEE JACKSON,	Greensboro,	Dairying.
JOHN HERBERT MCGOWAN,	Lake Comfort,	Dairying.
ROBERT SCOTT MCNAIRY,	Battle Ground,	Dairying.
BENJAMIN WADE MANGUM,	Alton,	Dairying.
OSCAR LOWELL MERCAHANT,	Dana,	Dairying.
MARCUS EDWARD MIMMS,	Holly Springs,	Dairying.
GATHER WINGATE MITCHELL,	Hexlena,	Dairying.
JAMES HENRY MITCHELL,	Hexlena,	Dairying.
CHARLES ELLIOTT RITCHIE,	China Grove,	Dairying.
JOSEPH WINDLEY SATTERTHWAITE,	Sidney,	Dairying.
HARTWELL VICK SCARBOROUGH,	Murfreesboro,	Dairying.
HORACE GREELY WADE,	Asheville,	Dairying.
JOHN CARL WHITE,	Mount Ulla,	Dairying.

## SUMMER SCHOOL.

<i>Name.</i>	<i>County or State.</i>
ANNIE ABERNETHY,	Warren.
R. B. ADAMS,	Wake.
KATE GREY ALLEN,	Catawba.
MRS. A. H. ALPHIN,	Craven.
MRS. W. J. ANDREWS,	Wake.
MARY ARLINGTON,	Duplin.
LILLIAN ASKEW,	Hertford.
MARY N. ASKEW,	Bertie.
CHARITY E. ATKINSON,	Wayne.
MARY H. ATWATER,	Chatham.
EFFIE AVENT,	Wake.
KATE BAGLEY,	Halifax.
MRS. L. W. BAGLEY,	Halifax.
LILA H. BAILEY,	Alamance.
AMELIA BAKER,	Perquimans.
MRS. J. M. BARBEE,	Wake.
P. F. BARBER,	Guilford.
ANNIE R. BARNES,	Bertie.
GRACE BATES,	Wake.
IDA BEARDSLEY,	Warren.
LIZZIE BELLAMY,	Wake.
NANCY BELVIN,	Wake.
SALLIE P. BETTS,	Harnett.
H. H. BLACKWELDER,	Cabarrus.
ANNIE K. BLAIR,	Guilford.
MRS. CHLOE P. BLALOCK,	Wake.
ISABEL BLAND,	Wake.
MRS. S. E. BLEDSOE,	Wake.
LENA BODDIE,	Nash.
ERNIE N. BOOKER,	Johnston.
MRS. W. R. BOND,	Halifax.
CLAUDIA BOONE,	Franklin.
MRS. B. A. BOWERS,	Halifax.
MARY R. BOYETTE,	Duplin.
S. F. BOYLES,	South Carolina.
NED F. BRANNOCK,	Alamance.
MARGARET V. BRASWELL,	Wake.
MRS. KATIE BREECE,	Cumberland.

<i>Name.</i>	<i>County or State.</i>
HATTIE BROGDEN,	South Carolina.
ELIZABETH BROOKS,	Moore.
LUCY BROOKS,	Lenoir.
ROSA BROUGHTON,	Wake.
LELA BROWN,	Pitt.
MARY S. BROWN,	Arizona.
W. M. BROWN,	Davidson.
ALICE BRYAN,	Wake.
ELVA BRYAN,	Chatham.
KATE BRYAN,	Moore.
MARY BRYAN,	Wake.
AGNES BUFFALO,	Wake.
R. H. BURNS,	Nash.
STELLA M. BURT,	Wake.
MARY BURTON,	Wake.
RAYMOND A. BURT,	Wake.
NELLIE BUYS,	Craven.
MARY BYNUM,	Chatham.
MARY CANNADY,	Durham.
MINNIE CANNADY,	Durham.
LEYTA R. CARTER,	Nash.
MINNIE B. CARTWRIGHT,	Pasquotank.
ELIZABETH M. CARVER,	Wake.
J. D. CHAMPION,	Harnett.
ANNIE CLARK,	Wake.
BELLE CLARK,	Bladen.
GERTRUDE M. COFFIELD,	Chowan.
MRS. ETTA COLEMAN,	Wilson.
NINA D. COLLINS,	Nash.
EMMA CONN,	Wake.
ETTA F. CORDON,	Beaufort.
BETTIE COUNCIL,	Wake.
CLYDE COX,	Pitt.
EULALIE COX,	Pitt.
CARRIE CRONENBURG,	South Carolina.
ELIZABETH CROSLAND,	Richmond.
J. T. CROWDER,	Wake.
J. E. CRUTCHFIELD,	Guilford.
BELLE DARDEN,	Wake.
LUCY D. DAVIS,	Vance.

<i>Name.</i>	<i>County or State.</i>
MARY A. DAVIS,	Vance.
MAY HILL DAVIS,	Wake.
S. JAY DAVIS,	Wilson.
THEO. B. DAVIS,	Graham.
LILLIAN S. DEAN,	Vance.
MATTIE LUCINDA DEAN,	Vance.
GEORGE W. DESHAZO,	Rockingham.
ELLIE E. DICKS,	Wake.
LILLIAN DODD,	Randolph.
ROSINA DOWELL,	Moore.
W. G. DOZIER,	Nash.
MARY EDMUNDSON,	Halifax.
LENA M. EDWARDS,	Wake.
ROSA EDWARDS,	Vance.
ELLEN ELDRIDGE,	Johnston.
SADIE LEE ELLIAS,	Wake.
JENNIE ELLIS,	Wilson.
NORA ELLIS,	Vance.
NANNIE ELLISON,	Wake.
KATHLEEN ELMORE,	Wayne.
MAGGIE EPPS,	Virginia.
MILLIE J. EVERETT,	Martin.
LIZZIE FEATHERSTON,	Caswell.
KATE FENNER,	Halifax.
IOLA FERGUSON,	Chatham.
J. W. FLEETWOOD,	Northampton.
BELLE FLEMING,	Wake.
ROBERT R. FLEMING, JR.,	Pitt.
ALICE H. FLOWERS,	Wayne.
FANNIE FORT,	Wake.
SALLIE H. FORT,	Wake.
RUTH FOSTER,	South Carolina.
FANNIE FOUST,	Alamance.
E. B. FOWLER,	Union.
MINNIE L. FRANKLIN,	Wake.
STELLA BRANSON FRANKLIN,	Wake.
BESSIE L. FREEMAN,	Rowan.
FANNIE FREEMAN,	Wilson.
CARRIE HUNT FULLER,	Granville.
LAURA F. GALLANDY,	Surry.

<i>Name.</i>	<i>County or State.</i>
MRS. A. B. GALLOWAY,	Surry.
BETTIE GAMBLE,	Gaston.
NONIE GARNER,	Chatham.
SUDIE GAY,	Wilson.
HELEN E. GILLAM,	Bertie.
LILLIE GLASGOW,	Franklin.
LIZZIE R. GOELET,	Washington.
J. B. GRAY,	Buncombe.
M. G. GRAY,	Bertie.
ANNIE N. GREEN,	Chatham.
E. L. GREEN,	Wake.
W. M. GREEN,	Wake.
MAUDE E. GUESS,	Wake.
MAUDE GURLEY,	Bertie.
EMMA HACKNEY,	Chatham.
MARTHA R. HAMLIN,	Rockingham.
OLIVE HAMRICK,	Cleveland.
ELEANOR W. HANCE,	District of Columbia.
EMMA O. HANCE,	District of Columbia.
PEARL HARPER.	Wake.
HATTIE T. HARRINGTON,	Richmond.
J. J. HARRINGTON,	Pitt.
EUGENIA HARRIS,	Wake.
CLYDE HARRISON,	Wake.
JOSIE HATCH,	Chatham.
SUSIE HEARTSFIELD,	Wake.
LILLY HICKS,	Wake.
A. R. HODGE, JR.,	Wake.
LILLIE HOLLOWAY,	Durham.
LUELLA HOLLOWAY,	Wake.
LIZZIE HOLMAN.	Wake.
DENIE MAE HORTON,	Wake.
REBECCA PUGH HUDGINS,	Chowan.
ANNIE HUNDLEY,	Rockingham.
MYRA HUNTER,	Halifax.
NORFLEET M. HUNTER,	Granville.
MRS. HERBERT W. JACKSON,	Wake.
ELLEN JENKINS,	Jones.
LILA JENKINS,	Jones.
MRS. B. S. JERMAN,	Wake.

<i>Name.</i>	<i>County or State.</i>
MRS. M. J. JOHNSTON,	Washington.
STELLA JOHNSTON,	Wake.
A. P. JONES,	Wake.
W. A. JUDD,	Wake.
SUSIE KEEL,	Pitt.
BESSIE KENDRICK,	South Carolina.
LUCY KITTRELL,	Vance.
ROBERT KITTRELL,	Granville.
BESSIE KOONCE,	Onslow.
DUNNIE KOONCE,	Jones.
MARIE E. LANKFORD,	Wake.
MARY F. LANNEAU,	Wake.
BYRD LAWRENCE,	Wake.
MRS. LOULA J. LAWRENCE,	Granville.
NANNIE LEACH,	Vance.
HENRIETTA LEE,	South Carolina.
C. H. LENTZ,	Alexander.
MAY LIDE,	Richmond.
T. H. LINDSEY,	Tennessee.
EDNA LINEBERRY,	Randolph.
E. W. LOCKHART,	Orange.
ALICA LOVE,	Wake.
EDNA LOVE,	Alexander.
CATHERINE MCARN,	Robeson.
CLAUDIE MCCULLERS,	Wake.
ELLA MCDANIEL,	South Carolina.
MRS. W. H. MCKINNON,	Robeson.
ELIZABETH W. MCLEAN,	South Carolina.
EUNICE MACKAY,	Harnett.
ANNIE LEE MACMILL,	Moore.
MARY R. MACKEY,	Wake.
KATE MAGNESS,	South Carolina.
ELIZABETH D. MALLOY,	South Carolina.
MRS. BURKHEAD N. MANN,	Chatham.
A. J. MANNING,	Pitt.
MARY V. MARSH,	Wake.
ELIZABETH MASSEY,	Wake.
W. D. MASSEY,	Wake.
EMMA MATTHEWS,	Johnston.
MRS. PAUL B. MEANS,	Cabarrus.



<i>Name.</i>	<i>County or State.</i>
EDITH MEYER,	Virginia.
DORA MILLER,	Lenoir.
IVEY MITCHELL,	Bertie.
LIZZIE MITCHELL,	Alleghany.
ETTA MONROE,	Moore.
TERRA MONROE,	Moore.
ELIZA MOORE,	Lenoir.
KATIE MOORE,	Beaufort.
ROSA MOORE,	Robeson.
LILLIE MORGAN,	Union.
LOTTIE MORTON,	Virginia.
CLYDE B. MOSS,	Halifax.
MYRTIE MUSE,	Moore.
DAISY NANCE,	Granville.
AMANDA FRANCIS NOWELL,	Bertie.
MRS. FRANK L. OATES,	Wayne.
JENNIE T. OLDHAM,	Orange.
JESSIE WILLS PAGE,	Vance.
MARY PAGE,	Wake.
SALLIE PARHAM,	Wake.
ELIZA PARKER,	Halifax.
LYL PARISH,	South Carolina.
C. B. PARTIN,	Wake.
JULIA PASMORE,	Wake.
STELLA PASMORE,	Wake.
D. A. PATE,	Scotland.
JANIE EVANS PATTERSON,	Scotland.
MRS. P. C. PATTERSON,	Wake.
ALICE E. PENNY,	Wake.
GEORGE L. B. PENNY,	Wake.
NETA PENNY,	Wake.
ANNIE PERKINS,	Pitt.
ISABEL PESCU,	Wake.
JANE PESCU,	Wake.
PAUL N. PITTINGER,	Wake.
LELA B. POOL,	Wake.
LUCY M. POWELL,	Wake.
MARY LOU POWERS,	New Hanover.
KATE PRIDGEN,	Wake.
ANNIE M. PULLEY,	Wake.

<i>Name.</i>	<i>County or State.</i>
ANNIE PURCELL,	Robeson.
EDNA C. PURCELL,	Robeson.
FLORENCE PURNELL,	Franklin.
ROSA QUINERY,	Pitt.
MINNIE QUINN,	Pitt.
ANNIE E. RANDOLPH,	Pitt.
L. N. RANES,	Wake.
ALICE E. RAY,	Wake.
MRS. PASCHALL REDDISH,	Wake.
MINNIE REDFORD,	Wake.
LOULA RIDDLE,	Wake.
MRS. WILEY RHODES,	South Carolina.
WILEY RHODES,	South Carolina.
EBIE ROBERTS,	Wake.
EUGENIA ROBERTS,	Gates.
MATTIE ROBERTS,	Franklin.
LELIA ROBERTSON,	Wake.
EUPHEMIA ROBINSON,	Gaston.
ETTA E. ROLLINS,	Wake.
SUSANNA FELS ROSENTHAL,	Wake.
EVA ROSS,	South Carolina.
HATTIE F. ROWLAND,	Vance.
EDITH ROYSTER,	Wake.
MARY R. RUSSELL,	Durham.
EVA SAMS,	South Carolina.
K. G. SHELLEM,	Cleveland.
MRS. FRANKLIN SHERMAN, JR.,	Wake.
MRS. FRANC SHERWOOD,	Wake.
VIRGINIA SHIVERS,	Edgecombe.
MRS. ESTOY SIGMON,	Wake.
NANNIE SKINNER,	Wake.
F. SLOAN,	Wake.
ALMA SMITH,	Wake.
BERTHA SMITH,	Wake.
H. Y. SMITH,	Wake.
MILDRED SMITH,	Wake.
O. DE SMITH,	Texas.
JOHN W. SNIPES,	Orange.
ANNA E. SPAIN,	Pitt.
ELISE STAMPS,	Wake.

<i>Name.</i>	<i>County or State.</i>
MIRIAM STAMPS,	Wake.
BERTHA STEIN,	Wake.
META L. STEWART,	Scotland.
MARY E. STEWART,	Scotland.
WILLIAM HARRY STEPHENSON,	Northampton.
JESSIE O. STOCKARD,	Alamance.
MARIA STREET,	Chatham.
ANNA M. TAYLOR,	Wilson.
LENA TAYLOR,	Wake.
MAMIE E. TAYLOR.	
LILLIAN TERRELL,	Wake.
LIZZIE TERRELL,	Wake.
MRS. M. B. TERRELL,	Wake.
ANNIE L. THIGPEN,	Pitt.
BERTHA THOMPSON,	Wayne.
IDA S. THOMPSON,	Durham.
MRS. S. W. THOMPSON,	Wake.
IDA TOMLINSON,	Wayne.
MAMIE TUCK,	Johnston.
SALLIE P. TUCKER,	Pitt.
J. M. TURNER,	Wake.
MAGGIE TURNER,	Wake.
MAMIE C. TURNER,	Wake.
LUCYE TWINE,	Perquimans.
CAREY ALMON UPCHURCH,	Wake.
LIZZIE H. UTLEY,	Wake.
W. W. UTLEY,	Wake.
FRED. UNDERWOOD,	Catawba.
MYRTLE UNDERWOOD,	Wake.
KATIE VAUGHAN,	Halifax.
ADA C. WARD,	Pitt.
MARY R. WATSON,	Robeson.
A. C. WEATHERLY,	Durham.
ALLIE WEATHERS,	Wake.
FANNIE MAY WEBB,	Granville.
L. MAE WEEKS,	Pasquotank.
ROSA WESTRAY,	Wake.
MRS. C. D. WHITLEY,	Wake.
HALLIE O'DONNELL WILLIAMS,	Hertford.
JANE EVANS WILLIAMS,	Robeson.

<i>Name.</i>	<i>County or State.</i>
MARTHA J. WILLIAMS,	Wake.
MAY WILLIAMS,	Hertford.
MRS. C. M. WILLIAMSON,	Wake.
MARY L. WILLS,	Halifax.
C. W. WILSON,	Halifax.
ELIZABETH WILSON,	Wake.
J. C. WILSON,	Alamance.
MYRTLE WILSON,	Pitt.
BELLE M. WIMBISH,	Virginia.
IDA WINSTEAD,	Wilson.
ORA H. WINSTON,	Franklin.
GEORGIA WITHERSPOON,	South Carolina.
FANNIE WOOD,	
MOLLIE J. WOMACK,	Rockingham.
FRANCIS V. WOMBLE,	Wake.
MRS. NORMA WYSONG,	South Carolina.
VIVIAN WYSONG,	South Carolina.
ANNA C. YATES,	Wake.

# FOURTEENTH ANNUAL COMMENCEMENT.

May 28, 1903.

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## BACHELOR OF AGRICULTURE.

JOHN ELIOT COIT.

## BACHELORS OF ENGINEERING.

### In Civil Engineering.

SUMMEY CROUSE CORNWELL,	JOHN THOMAS LAND,
BENNETT LAND, JR.,	JESSE JAMES MORRIS,
GEORGE YATES STRADLEY.	

### In Mechanical Engineering.

WILLIAM MORTON BOGART,	JONATHAN HOWARD GLENN,
WALTER CLARK, JR.,	EUGENE COLISTUS JOHNSON,
HUGH PIERCE FOSTER,	JOEL POWERS,
EDWARD HAYS RICKS.	

### In Electrical Engineering.

EUGENE ENGLISH CULBRETH,	EMIL GUNTER,
THEOPHILUS THOMAS ELLIS,	EDWARD SHAW LYTCH,
JOHN DANIEL FERGUSON,	DAVID STARR OWEN,
LAMAR CARSON GIDNEY,	JOHN HARVEY PARKER,
GASTON WILDER ROGERS.	

### In Textile Industry.

LESLIE NORWOOD BONEY,	JAMES MATTHEW KENNEDY,
JOHN SAMUEL P. CARPENTER,	CHARLES BURDETTE ROSS,
WALTER LEE DARDEN,	EDWARD ROE STAMPS,
EDWIN SEYMOUR WHITING.	

## BACHELORS OF SCIENCE.

### In Industrial Chemistry.

CHARLES LESTER CREECH,	JOHN HOUSTON SHUFORD,
JUNIUS FRANKLIN DIGGS,	CHARLES EDWARD TROTTER,
OLIVER MAX GARDNER,	JONATHAN WINBORNE WHITE.

**MASTER OF SCIENCE.****In Chemistry.**

WILLIAM ANDERSON SYME, B.S.

**HONORS IN SCHOLARSHIP.****Senior Class.**

J. E. COIT,

E. GUNTER.

J. H. GLENN,

**Junior Class.**

J. W. FARRIOR,

P. S. GRIERSON,

G. H. HODGES,

E. E. LINCOLN,

R. P. REECE,

W. W. FINLEY,

J. B. HARDING,

WILLIAM KERR,

F. C. PHELPS,

J. C. TEMPLE,

J. K. WAITT.

**Sophomore Class.**

J. T. BAILEY,

S. D. WALL,

J. A. PARK,

C. A. SEIFERT,

E. G. PORTER,

S. T. WHITE,

J. RHODES SMITH,

J. E. WILLIAMS,

**Freshman Class.**

G. G. ALLEN,

J. F. HANSELMAN,

C. M. HAMILTON,

H. L. HAMILTON.

**Short Course Class.**

S. S. MAUNEY,

W. W. ROSEMAN.

**Irregular Class.**

W. R. BAILEY.

**HONORS FOR PUNCTUALITY.**

GEORGE GILDEROY ALLEN,

RISDEN TYLER ALLEN,

WILLIAM OSBORNE CRUMP,

HUGH PIERCE FOSTER,

WILLIAM JOEL PATTON,

CHARLES EDWARD TROTTER,

MARION EMERSON WEEKS.

**PRIZES IN AGRICULTURE.****First Prize.**

S. W. FOSTER.

**Second Prize.**

J. C. BEAVERS.

Medal, presented by Zenner Disinfectant Company for judging stock—W. W. FINLEY.

Cash prize of five dollars, offered by State Agricultural Society for best report of Stock Exhibit—FRANK R. SMITH.

United States Cream Separator, presented by Vermont Farm Machine Company for best essay on "The Making of a Dairy Farm"—CLARENCE LYTCH.

Sharples Cream Separator, presented by P. M. Sharples for best essay on "The Middle South as a Dairy Section"—W. W. FINLEY.

Ton of Commercial Fertilizer, presented by Caraleigh Phosphate and Fertilizer Company for best essay on "Soil Fertilization"—L. A. NIVEN.

Set of Rural Science Books, presented by the MacMillan Publishing Company for the best essay on "The Farmer's Library"—R. F. WARREN.

"Storer's Agriculture," presented by Charles Scribner's Sons for the best essay on "The Farmer a Student"—C. C. HARRELL.

Registered Jersey bull, presented by Fairview Dairy Farm for best essay on "Formation and Management of a Dairy Herd"—A. C. WHARTON.

**PRIZES IN BIOLOGICAL CLUB CONTEST.**

(PRIZES PRESENTED BY A. H. THOMAS CO.)

**First Prize.**

S. W. FOSTER.

**Second Prize.**

J. W. BULLOCK.

**CHAMBERLAIN PRIZE.**

**For Best Kept Account of Expenses.**

L. V. EDWARDS.

**For Least Unnecessary Expenses.**

J. P. SPOON.



# REGISTER OF ALUMNI.

## CLASS OF 1893.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROBERT WILSON ALLEN,	B. E.,	Reidsville, N. C.
Principal of Graded School.		
SAMUEL ERSON ASBURY,	B. S.,	Raleigh, N. C.
M. S. 1896. Assistant Chemist State Agricultural Department.		
HENRY EMIL BONITZ,	B. E.,	Wilmington, N. C.
Architect.		
FRANK FULLER FLOYD,	B. E.,	Knoxville, Tenn.
Superintendent Lynotype Plant for <i>Knoxville Sentinel</i> .		
CHARLES DUFFY FRANCKS,	B. E.,	Richlands, N. C.
Farmer and Merchant.		
EDWARD MOORE GIBBON,	B. E.,	Charlotte, N. C.
Civil Engineer, The Engineering Company of America.		
GEORGE PENDER GRAY,	B. S.,	Memphis, Tenn.
Farm Manager.		
CHARLES BOLLING HOLLADAY,	B. E.,	Wilmington, Del.
Treasury Department The Dupont Co.		
WILLIAM MCNEILL LYTCH,	B. E.,	Laurinburg, N. C.
Superintendent Cotton Seed Oil Mill.		
JAMES WILLIAM MCKOY,	B. E.,	Black Mountain, N. C.
Civil Engineer and Merchant.		
WALTER JEROME MATHEWS,	B. E.,	Goldsboro, N. C.
Electrician and Chief Engineer for the Eastern N. C. Asylum for the Insane.		
FRANK THEOPHILUS MEACHAM,	B. S.,	Statesville, N. C.
M. S. 1894. Superintendent State Test Farm.		
CARL DEWITT SELLARS,	B. E.,	Greensboro, N. C.
Bookkeeper for Cone Export and Commission Co.		
CHARLES EDGAR SEYMOUR,	B. S.,	Raleigh, N. C.
Farmer.		
BUXTON WILLIAMS THORNE,	B. E.,	Holly Springs, Miss.
Assistant Cashier Merchants and Farmers Bank.		
WILLIAM HARRISON TURNER,	B. E.,	Winston-Salem, N. C.
Secretary and Treasurer Wachovia Mills (F. & H. Fries) and Twin-City Wood Co.		

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES BURGESS WILLIAMS,	B. S.,	Raleigh, N. C.
M. S. 1896. Assistant Chemist State Agricultural Department.		
LOUIS THOMAS YARBROUGH,	B. E.,	Raleigh, N. C.
Night Clerk Raleigh Post-office.		
SAMUEL MARVIN YOUNG,	B. E.,	Raleigh, N. C.
Of S. M. & W. J. Young.		

### CLASS OF 1894.

CHARLES EDWARD CORPENING,	B. E.,	Lenoir, N. C.
Farmer and Dealer in Lumber and Real Estate.		
DAVID COX, JR.,	B. E.,	Hertford, N. C.
Architect and County Surveyor.		
ROBERT DONNELL PATTERSON, JR.,	B. S.,	Chase City, Va.
M. S. 1898. With American Tobacco Co.		
CHARLES PEARSON,	B. E.,	Charleston, S. C.
Draughtsman U. S. Government.		
ZEBBIE GEORGE ROGERS,	B. E.,	Washington, D. C.
Civil Engineer Baltimore and Ohio Railroad.		
JOHN HYER SAUNDERS,	B. E.,	Pinner's Point, Va.
Locomotive Engineer N. & C. R. R.		
BENJAMIN FRANKLIN WALTON,	B. S.,	West Raleigh, N. C.
N. C. Experiment Station.		
JOHN McCAMY WILSON,	B. E.,	Inman, S. C.
Chief Engineer and Master Mechanic Inman Cotton Mill.		

### CLASS OF 1895.

THOMAS MARTIN ASHE,*	B. E.,	Raleigh, N. C.
Architect—Pearson & Ashe.		
JAMES ADRIAN BIZZELL,	B. S.,	Ithaca, N. Y.
M. S. 1900. Ph. D. Cornell University. Chemist Cornell University Expt. Station.		
JOHN ISHAM BLOUNT,	B. E.,	Pittsburg, Pa.
C. E. 1897. M. E. Cornell University. Pennsylvania Steel Co.		
JAMES WASHINGTON BRAWLEY,	B. S.,	Mooresville, N. C.
Merchant and Farmer.		
WALTER AUSTIN BULLOCK,	B. S.,	Amsterdam, Ga.
Superintendent Tobacco Farm.		

\* Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DAVID CLARK,	B. E.,	Charlotte, N. C.
M. E. Cor. Univ. M. E. 1896. C. E. 1897. President Clark Manufacturing Co. and President Eugenia Manufacturing Co., Jonesboro, N. C.		
GEO. WASHINGTON CORBETT, JR.,	B. E.,	Raleigh, N. C.
Machinist and Chief Engineer Hildrup Wood Vulcanizing and Fire Proofing Co.		
EDWIN SPEIGHT DARDEN,	B. S.,	Wilson, N. C.
With Cooper & Watson, Tobacconists.		
WILLIAM KEARNEY DAVIS, JR.,	B. E.,	Marion, S. C.
Superintendent Ashley Cotton Mills.		
JOSEPH CHARLES DEY,	B. S.,	Norfolk, Va.
Produce Broker.		
LEE BORDEN ENNETT,	B. S.,	Cedar Point, N. C.
Farmer.		
ISAAC HENRY FOUST,	B. E.,	Burlington, N. C.
Erecting Foreman Carolina Steel Bridge and Construction Co.		
CHARLES WILLIS GOLD,	B. S.,	Wilson, N. C.
Vice-President Peacock & Gold Co., Insurance.		
WILLIAM HENRY HARRISS,	B. E.,	Atlanta, Ga.
M. E. 1896. Representing Richard A. Blythe, Philadelphia, Pa.		
CHRISTOPHER MILLER HUGHES,	B. E.,	Raleigh, N. C.
B. S. 1899. With Commercial and Farmers Bank.		
MALCOLM BEALL HUNTER,	B. E.,	Camden, N. J.
Philadelphia Bell Telephone Co.		
SAMUEL CHRISTOPHER McKEOWN,	B. E.,	Sumter, S. C.
Draftsman, The Sumter Telephone Manufacturing Co.		
MANN CABE PATTERSON,	B. E.,	Durham, N. C.
Farmer.		
ABRAM HINMAN PRINCE,	B. S.,	Washington, D. C.
U. S. Soil Survey.		
VICTOR VASHTI PRIVOTT,	B. E.,	Lexington, N. C.
[Chief Engineer and Machinist Nokomis Cotton Mills.		
HOWARD WISWALL, JR.,	B. E.,	Wilmington, N. C.
Engineer United States Engineer Department.		
CHARLES GARRETT YARBROUGH,	B. E.,	Chicago, Ill.
Foreman Testing Department Western Electric Co.		
CHARLES MARCELLUS PRITCHETT,	M. E.,	Washington, D. C.
C. E. 1896. Engineer U. S. Geological Survey.		

## CLASS OF 1896.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
DANIEL ALLEN,	B. S.,	Raleigh, N. C.
	Of Pool & Allen.	
GEORGE STRONACH FRAPS,	B. S.,	College Station, Texas.
Ph. D. Johns Hopkins University. Acting Chemist Texas Experiment Station.		
MARION JACKSON GREEN,	B. S.,	Morganton, N. C.
Mechanical Instructor North Carolina School for Deaf and Dumb.		
JOHN HOWARD,	B. S.,	Blackwood, Va.
Resident Engineer Blackwood Coal and Coke Co.		
WILLIAM COLBERT JACKSON,	B. S.,	Ayden, N. C.
General Merchant.		
ROBERT GRAHAM MEWBORNE,	B. S.,	Louisville, Ky.
Chemist Kentucky Tobacco Product Co.		
LEVI ROMULUS WHITTED,	B. S.,	Charleston, S. C.
C. E. 1897. Draughtsman in charge U. S. Navy Department.		
HENRY LLOYD WILLIAMS,	B. S.,	Willeyton, N. C.
General Manager Willeyton Lumber Co.		

## CLASS OF 1897.

JOSEPH SAMUEL BUFFALOE,	B. S.,	Garner, N. C.
Physician.		
JOHN WILLIAM CARROLL,	B. S.,	Wallace, N. C.
M. D. University of Maryland 1903. Physician.		
CHARLES EDWARD CLARK,	B. S.,	Charlotte, N. C.
Truck Farmer.		
WM. ALEXANDER GRAHAM CLARK,	B. S.,	Jonesboro, N. C.
M. E. Cornell Univ. Treasurer Eugenia Mfg. Co. and Clark Mfg. Co., Jonesboro, N. C.		
NICHOLAS LOUIS GIBBON,	B. S.,	Biddeford, Me.
Mill Engineer Saco & Pettee Machine Works.		
C. D. HARRIS,	B. S.,	Raleigh, N. C.
A. M. Cornell Univ. Asst. Chemist and Microscopist N. C. Dept. of Agriculture.		
JERE EUSTIS HIGHSMITH,	B. S.,	Maitland, N. C.
Farmer.		
CLYDE BENNETT KENDALL,	B. S.,	Washington, D. C.
Field Assistant U. S. Geological Survey.		
SYDNEY GUSTAVUS KENNEDY,	B. S.,	Newark, N. J.
With J. S. Mundy Engine Works.		

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JOSEPH LAWRENCE KNIGHT,	B. S.,	Dewey, Fla. Firm of Pitt & Knight, Naval Stores and Cattle.
WALTER JONES MCLENDON, JR.,	B. S.,	Marshall, N. C. President and General Manager Capitola Mfg. Co.
REPTON HALL MERRITT,	B. S.,	McAdensville, N. C. Book-keeper Cotton Mill.
ALBERT HICKS OLIVER,	B. S.,	New Orleans, La. Dairyman and Farm Superintendent.
HUGH WILLIAM PRIMROSE,*	B. S.,	Raleigh, N. C. M. S. 1900.
WILLIS HUNTER SANDERS,	B. S.,	Roanoke Rapids, N. C. Chief Engineer Roanoke Navigation and Water-power Co.
THOMAS JEHU SMITHWICK, ·	B. S.,	Port Royal, S. C. Electrical Engineer Navy Yard.
LEA WATSON,	B. S.,	Atlanta, Ga. Manager Southern Engineering Specialty Co.
BRADLEY JEWETT WOOTTEN,*	B. S.,	Wilmington, N. C. Lieutenant U. S. Army.

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### CLASS OF 1898.

DORSEY FROST ASBURY,	B. S.,	Seattle, Wash. Ventilation Draughtsman Moran Bros. Shipyard.
SIDNEY HAMILTON BECK,	B. S.,	Washington, D. C. Marine Engineer Navy Department.
ANSON ELIKEM COHOON,	B. S.,	Washington, D. C. With Forestry Division Department of Agriculture.
HUGH McCULLOM CURRAN,	B. S.,	Washington, D. C. With Forestry Division. Department of Agriculture.
BENJAMIN CAREY FENNELL,	B. S.,	Charlotte, N. C. M. E. 1900. Engineer, A. H. Washburn.
ALPHEUS ROUNTREE KENNEDY,	B. S.,	Mystic, Conn. Draughtsman Eastern Ship Building Co.
FREDERICK CREECY LAMB,	B. S.,	Raleigh, N. C. Assistant Chemist N. C. Department of Agriculture.
EDWIN BENTLEY OWEN,	B. S.,	Chicago, Ill. Graduate Student Chicago University.

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\* Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
MOORE PARKER,	B. S.,	Clemson, S. C.
Assistant in Carding and Spinning Clemson Agricultural College.		
NUMA REID STANSEL,	B. S.,	Portsmouth, Va.
Chief Electrical Engineer U. S. Navy Yard.		
TEISAKU SUGISHITA,	B. S.,	Kokufu, Hida, Japan.
Civil Engineer.		
GEORGE FREDERICK SYME,	B. S.,	Copen, W. Va.
Resident Civil Engineer Coal and Coke Railway.		

### CLASS OF 1899.

WM. DAVIDSON ALEXANDER, JR.,	B. S.,	Charlotte, N. C.
Assistant Superintendent Mecklenburg Iron Works.		
IRA WILSON BARBER,	B. S.,	Port Royal, S. C.
Electrical Machinist Naval Station.		
JOHN HENDERSON BIRDSONG,	B. S.,	Duquesne, Pa.
Chemist Carnegie Steel Company.		
FRANCIS MARION FOY,	B. S.,	Scotts Hill, N. C.
Truck Farmer.		
ALBERT SIDNEY LYON,	B. S.,	Roanoke Rapids, N. C.
Superintendent Roanoke Navigation and Water Power Co.'s Electrical Power Plant.		
CARBOLL LAMB MANN,	B. S.,	West Raleigh, N. C.
Instructor in Civil Engineering.		
O'KELLY WILLIAM MYERS,	B. S.,	Washington, N. C.
Civil Engineer, U. S. Engineering Department.		
EUGENE LEROY PARKER,	B. S.,	Mt. Pleasant, Tenn.
Chemist Federal Chemical Co.		
EUGENE GRAY PERSON,	B. S.,	Concord, N. C.
Book-keeper Gibson Manufacturing Co.		
FREDERICK ERASTUS SLOAN,	B. S.,	West Raleigh, N. C.
Registrar N. C. College of Agriculture and Mechanic Arts.		
ANDREW THOMAS SMITH,	B. S.,	Newsport News, Va.
Draftsman, Newport News S. S. and D. D. Co.		
ALEXIS PRESTON STEELE,	B. S.,	Statesville, N. C.
Mechanical Engineer J. C. Steele & Son's Brick Machinery Co.		
WILLIAM ANDERSON SYME,	B. S.,	Baltimore, Md.
M. S. 1903. Graduate Student Johns Hopkins University.		

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
HUGH WARE,	B. S.,	Ensley, Ala.
Assistant Chemist Tennessee Coal, Iron and Railroad Co.		
CLAUD BURGESS WILLIAMS,	B. S.,	Norfolk, Va.
Resident Physician Protestant Hospital.		

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### CLASS OF 1900.

KEMP ALEXANDER,	B. E.,	Kernersville, N. C.
Superintendent Davis-Crews Co. Hosiery Mill.		
LESLIE LYLE ALLEN,	B. E.,	Newport News, Va.
Draughtsman Newport News Ship Building Co.		
ROBERT LINN BERNHARDT,	B. S.,	Salisbury, N. C.
With Salisbury Hardware and Furniture Co.		
LESLIE GRAHAM BERRY,	B. E.,	Chicago, Ill.
Structural Engineer with Purdy & Henderson.		
JAMES HARRY BUNN,	B. E.,	Henderson, N. C.
Assistant Secretary Henderson Cotton Mill.		
SAMUEL MERRILL HANFF,	B. S.,	Sewanee, Tenn.
Theological Student University of the South.		
GEORGE ROLAND HARRELL,	B. S.,	Baltimore, Md.
Metallurgist The Baltimore Copper Smelting and Rolling Co.		
HENRY ALLEN HUGGINS,	B. S.,	Raleigh, N. C.
Chemist Caraleigh Phosphate Co.		
GARLAND JONES, JR.,	B. S.,	Fort Worth, Tex.
Chemist Armour & Co.		
LOUIS HENRY MANN,	B. E.,	Middleton, N. C.
Dentist.		
ROBERT HALL MORRISON,	B. E.,	Mariposa, N. C.
Assistant Manager Cotton Mill.		
WILLIAM MONTGOMERY PERSON,	B. E.,	Steelton, Pa.
Draughtsman Pennsylvania Steel Co.		
JUNIUS EDWARD PORTER,	B. E.,	Portsmouth, Va.
Chief Draughtsman S. A. L. Railway.		
ROGER FRANCIS RICHARDSON,	B. E.,	West Raleigh, N. C.
Graduate Student N. C. College of A. and M. Arts.		
WILLIAM EDWIN ROSE,	B. E.,	Newport News, Va.
Draughtsman Newport News S. S. and D. D. Co.		
FLOYD DE ROSS,	B. E.,	Charlotte, N. C.
Electrician The S. B. Alexander Jr. & Co.		



<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
IRA OBED SCHAUB,	B. S.,	Urbana, Ill.
Assistant Chemist Agricultural Experiment Station.		
JOHN WADE SHORE,	B. S.,	Boonville, N. C.
Teacher and Farmer.		
WILLIAM TURNER SMITH,	B. E.,	Atlanta, Ga.
Bridge Engineer George H. Crafts Bridge Co.		
SOLOMON ALEXANDER VEST,	B. S.,	Goodrich, Tenn.
Chemist Standard Iron Co.		
ROSCOE MARVIN WAGSTAFF,	B. E.,	Newport News, Va.
With Newport News Ship Building Co.		
GAITHER HALL WHITING,*	B. S.,	Richmond, Va.
Assistant Chemist Virginia-Carolina Chemical Co.		

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### CLASS OF 1901.

FLETCHER HESS BARNHARDT,	B. E.,	Phoenixville, Penn.
Civil Engineer with Phoenix Bridge Co.		
WILLIAM OSBORNE BENNETT,	B. E.,	Wadesboro, N. C.
Superintendent Independent Cotton Oil Co.		
FRED WILLIAM BONITZ,	B. E.,	Wilmington, N. C.
Contractor and Builder.		
ZOLLY MOSBY BOWDEN,	B. E.,	Mulberry, Fla.
Electrical Superintendent with James Hull & Co.		
BEDFORD JETHRO BROWN,	B. E.,	Newark, N. J.
With the Westinghouse Electric Co.		
PAUL COLLINS,	B. S.,	Louisville, Ky.
With Franklin Publishing Co.		
WILLIAM PESCU D CRAIGE,	B. S.,	New Orleans, La.
With Peter F. Pescud, Insurance.		
WILLIAM LOIS CRAVEN,	B. E.,	Burlington, N. C.
Chief Draughtsman Carolina Steel Bridge and Construction Co.		
FELIX GRAY CRUTCHFIELD,	B. E.,	Philadelphia, Penn.
Chemist Baldwin Locomotive Works.		
GEORGE MASLIN DAVIS,	B. E.,	Winston-Salem, N. C.
Designing Engineer with Salem Iron Works.		
WILLIAM DOLLISON FAUCETTE,	B. E.,	Savannah, Ga.
Civil Engineer S. A. L. Railway.		

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\* Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
BENJAMIN OLIVER HOOD, Structural Draughtsman Carolina Steel Bridge and Construction Co.	B. E.,	Burlington, N. C.
MARTIN KELLOGG, Farmer.	B. Agr.,	Sunbury, N. C.
JESSE JULIAN LILES, Testing Department General Electric Co.	B. E.,	Schenectady, N. Y.
LEWIS OMER LOUGEE, Engineer Frick Coke Co.	B. E.,	Scottdale, Penn.
CHARLES HARDEN MCQUEEN, Civil Engineer with J. L. Ludlow, C. E.	B. E.,	Winston, N. C.
WILLIAM FRANKLIN PATE, Assistant Chemist Agricultural Experiment Station.	B. S.,	Urbana, Ill.
EDWARD OSCAR SMITH, Draughtsman Newport News Ship Building and Dry Dock Co.	B. E.,	Newport News, Va.
WALTER STEPHEN STURGILL, Student U. S. Military Academy.	B. E.,	West Point, N. Y.
BEVERLY NATHAN SULLIVAN, With Winston-Salem Gas and Lighting Establishment.	B. S.,	Winston-Salem, N. C.
CHARLES AUGUSTUS WATSON, Dyeing Department Fries Manufacturing Co.	B. S.,	Winston-Salem, N. C.
BENJAMIN VADEN WRIGHT, Civil Engineer Southern Pacific Railway.	B. E.,	Algiers, La.

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### CLASS OF 1902.

WILLIAM DAVID BOSEMAN, Farmer.	B. E.,	Rocky Mount, N. C.
JUNIUS SIDNEY CATES, N. C. Department of Agriculture.	B. S.,	Raleigh, N. C.
ROBERT BAXTER COCHRAN, General Electric Co.	B. E.,	Lynn, Mass.
JAMES LUMSDEN FEREBEE, Civil Engineer Durham and Charlotte Railway Co.	B. E.,	Pittsboro, N. C.
ROBERT IRVING HOWARD, Farmer.	B. E.,	Conetoe, N. C.
JOHN LUTHER MCKINNON, Farmer.	B. Agr.,	Laurinburg, N. C.
LAURIE MOSELEY, Draughtsman Carolina Steel Bridge and Construction Co.	B. E.,	Burlington, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
VASSAR YOUNG MOSS,	B. E.,	Portsmouth, Va. Machinist U. S. Navy Yard.
CHARLES ARTHUR NICHOLS,	B. E.,	Barnard, N. C. General Manager French Broad Mfg. Co.
JAMES LAFAYETTE PARKER,	B. E.,	Burlington, N. C. Structural Draftsman Carolina Steel Bridge and Construction Co.
WILLIAM BENEDICT REINHARDT,	B. E.,	Dawson, Y. T. Inspector, Dawson Electric Light and Power Co.
RUSSELL ELSTNER SNOWDEN,	B. E.,	Snowden, N. C. Civil Engineer, Coal and Coke Railway, Weston, W. Va.
JOSEPH PLATT TURNER,	B. E.,	Spray, N. C. Superintendent of Weaving, Cotton Mill.
CLEVELAND DOUGLASS WELCH,	B. E.,	West Raleigh, N. C. Graduate Student N. C. College of A. and M. Arts.

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### CLASS OF 1903.

WILLIAM MORTON BOGART,	B. E.,	Charlotte, N. C. Draftsman General Fire Extinguisher Co.
LESLIE NORWOOD BONEY,	B. E.,	Greensboro, N. C. Draftsman, J. H. Hopkins, Architect.
JOHN SAMUEL PINCK. CARPENTER,	B. E.,	Cherokee, S. C. Cotton Mill.
WALTER CLARK, JR.,	B. E.,	Chapel Hill, N. C. Law Student University N. C.
JOHN ELIOT COIT,	B. Agr.,	Ithaca, N. Y. Graduate Student in Horticulture Cornell University.
SUMMEY CROUSE CORNWELL,	B. E.,	Greensboro, N. C. Assistant City Engineer.
CHARLES LESTER CREECH,	B. S.,	Winston-Salem, N. C. With F. & H. Fries, Dyeing Department.
EUGENE ENGLISH CULBRETH,	B. E.,	West Raleigh, N. C. Graduate Student N. C. College of A. and M. Arts.
WALTER LEE DARDEN,	B. E.,	West Raleigh, N. C. Graduate Student N. C. College of A. and M. Arts.
JUNIUS FRANKLIN DIGGS,	B. S.,	Diggs, N. C. Farmer.
THEOPHILUS THOMAS ELLIS,	B. E.,	Henderson, N. C. Farmer.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JOHN DANIEL FERGUSON, Assistant Civil and Hydraulic Engineer with Ladshaw & Ladshaw.	B. E.,	Spartanburg, S. C.
HUGH PIERCE FOSTER, Machinist, U. S. Navy Yard.	B. E.,	Portsmouth, Va.
OLIVER MAX GARDNER, Instructor in Chemistry N. C. College of A. and M. Arts.	B. S.,	West Raleigh, N. C.
LAMAR CARSON GIDNEY, General Electric Co.	B. E.,	Schenectady, N. Y.
JOHN HOWARD GLENN, Instructor in Drawing N. C. College of A. and M. Arts.	B. E.,	West Raleigh, N. C.
EMIL GUNTER, General Electric Co.	B. E.,	Schenectady, N. Y.
EUGENE COLISTUS JOHNSON, Milling.	B. E.,	Ingold, N. C.
JAMES MATTHEW KENNEDY, Farmer.	B. E.,	Goldsboro, N. C.
BENNETT LAND, JR., Assistant Engineer Cape Fear Power Co.	B. E.,	Truth, N. C.
JOHN THOMAS LAND, Architect and Civil Engineer.	B. E.,	Elizabeth City, N. C.
EDMOND SHAW LYTCH, Westinghouse Electric Co.	B. E.,	Wilkinsburg, Pa.
JESSE JOHN MORRIS, Civil Engineer Raleigh and Pamlico Sound Railroad.	B. E.,	Norfolk, Va.
DAVID STARR OWEN, With Pepper & Register, Contractors.	B. E.,	Truth, N. C.
JOHN HARVEY PARKER, With The Corbin Screw Corporation.	B. E.,	New Britain, Conn.
JOEL POWERS, Draftsman and Machinist, Dewey Bros.	B. E.,	Goldsboro, N. C.
EDWARD HAYS RICKS, With Baldwin Locomotive Works.	B. E.,	Philadelphia, Pa.
GASTON WILDER ROGERS, Electrical Engineer Southern Bell Telephone and Telegraph Co.	B. E.,	Birmingham, Ala.
CHARLES BURDETTE ROSS, Assistant Manager Charlotte House Moving Co.	B. E.,	Charlotte, N. C.
JOHN HOUSTON SHUFORD, Head Dyer P. H. Hanes Knitting Co.	B. S.,	Winston-Salem, N. C.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
EDWARD ROE STAMPS,	B. E.,	South Norfolk, Va.
With F. S. Royster Guano Co.		
GEORGE YATES STRADLEY,	B. E.,	Asheville, N. C.
Civil Engineer Mountain Retreat Association.		
CHARLES EDWARD TROTTER,	B. S.,	Raleigh, N. C.
Hospital Steward State Penitentiary.		
JONATHAN WINBORNE WHITE,	B. S.,	Raleigh, N. C.
Dyer, Raleigh Hosiery Mill.		
EDWIN SEYMOUR WHITING,	B. E.,	Hamlet, N. C.
Employe S. A. L. Railway.		

















